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**DIARY DATES**

**Wednesday, 5 March 1997 Foundation Lecture.**
Please note change of date from 19 March to 5 March.

**18 April 1997 to 20 April 1997.**
Spring Conference. Bournemouth.
Friday.After Dinner."Some Dorset apothecaries and pharmacists" by John Hunt.
Saturday. 9.30 a.m. "History of Pharmacy Education" by Dr M. Earles.
10.15 a.m. "The 1851 Great Exhibition" by A. Morson.
11.30 a.m. "The Shop" by Mrs E. Lucas Smith
Afternoon - At leisure.
Sunday. 9.30 a.m. Annual General Meeting.
10.15 a.m. "The Continental parallel" by Dr A. Bierman.
11.15 a.m. "Justus von Liebig, gatekeeper of chemistry" by Prof. W.H.Brock.
12.00 Closing remarks.

**Wednesday, 7 May 1997.**
"The Rauwolfia Story" by Dr. W.E.Court.

**OBITUARY.** 97.1115 2

**Mary Agnes BURR.** OBE, MA(Hon.), F.R.Pharm.S.
As befitted a Charter Gold medallist (1973), and second woman President of the Royal Pharmaceutical Society, Mary had a keen interest in the history of our profession and did much to further it, even to the extent that when her Victorian pharmacy in Nottingham was to be demolished owing to the expansion of a nearby factory, she had it transferred to the Cookworthy Museum at Kingsbridge, Devon where it is to be seen today. A person of great energy for all her 90 years, we will not meet her like again - which is our loss.

A new Society has been formed, the **Historical Medical Equipment Society**, which represents the interests of all those interested in medical instruments and equipment. Membership includes collectors and curators in all fields, including pharmacy, medicine and dentistry. The Society aims to provide resources to collectors and museums, and to promote the study of the history of medical artifacts to the present day. The Chairman is Mr John Kirkup, FRCS, and the first meeting is planned for early 1997. Contact the Secretary, Dr David Warren, PO Box 85, Portsmouth, PO6 2BB for further information.

**Members' Activities.**

Bill Jackson has been awarded the degree of MSc by research for a thesis entitled "The Invention of the Stomach Pump and its Development in the Nineteenth century". After summarising early methods of dealing with poisoning, it reviews the changes which took place in the medical professions towards the end of the eighteenth century which resulted in the development of new technology including the invention of the stomach pump. It then traces the development of the powerful syringes used for this purpose, and then their replacement by simple siphons, as heroic medicine gave way to gentler therapy, as well as the economic and social factors which controlled their popularity, availability and distribution in the nineteenth century.

Dr M. Earles presented a paper on "John Hall and the Art of Prescribing" at a conference on the life and work of Dr John Hall, Shakespeare's son-in-law, held at Hall's Croft, Stratford-on-Avon on 25 September 1996.

More recently he has been busy with a paper for a conference to mark the 150th. anniversary of the introduction of anaesthesia.

Readers of the *Pharmaceutical Historian* will be pleased to learn that an Index is in the process of being prepared.

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# The Formulary of a West Yorkshire Pharmacy 1885 - 1927

## William E. Court

Pharmacy in the 1890's was predominantly retail practice, the chemist and druggist serving his surrounding population with a wide range of facilities. In the late 1800's there was no health service as we know it, money was in short supply for most ordinary people in industrial and agricultural areas and a visit to a medical practitioner was generally an expensive last resort. Some mutual benefit societies and insurance schemes offered limited cover but membership was essential and regular financial contributions had to be maintained. Similar schemes applied to some hospitals. But what could you do if you were not a member of an appropriate insurance scheme and you really could not afford to visit the doctor?

There were at least four possible solutions:-

**1.** Consult the local wise woman who knew about these things; she had no formal training or authority but had learnt her medical skills at her mother's knee and in the hard school of empirical observation and functioned unofficially, much like a district nurse, giving advice, attending confinements and childbirth (until excluded by an Act of 1902) and suggesting simple treatments often of a herbal nature.

**2.** Consult a medical handbook; many were available designed for the literate layman, books such as *Enquire Within* (75th. ed., 1880), *The Reformed Practice of Medicine* by Dr. S. Rosen (1887), *The Working Man's Model Family Botanic Guide or Every man his Own Doctor* by William Fox (1871), etc.

**3.** Purchase a proprietary medicine. The nostrum, the secret remedy, had developed as a local speciality but, as inter-communication improved, such remedies became known further afield and gradually became nationally established and advertised. Nehemiah Grew's patent on Epsom Salts (1698), followed by Byfield's Sal Oleosum Volatile (1711) and Richard Stoughton's Cordial Elixir (1712) commenced the succession of well advertised patent medicines which were to have great impact on pharmacy as the literacy of the population improved and many such medicines were to become household names known until the present time e.g. Beecham's products.

**4.** Visit the nearest Chemist and Druggist and seek his or, rarely, her knowledge of medical matters, a knowledge based on experience and information culled frequently from other people's encounters with disease states. Invariably the chemist would counterprescribe a remedy, giving advice on its use and hoping to satisfy the patient's trust. The counterprescribed medicine had, in the 19th century, many advantages over the ever-increasing number of proprietary medicines.

Literacy was essential if the customer was to read the optimistic advertisements praising the merits of the proprietary medicine but a visit to the chemist was personal and sealed a bond of friendly trust between the pharmacist and the customer. The always available pharmacist would rarely be out of stock of nostrums and was therefore not so dependent on his wholesale supplier who delivered hampers of drugs, etc. by horse and cart via the nearest canal dock or railway station perhaps once a week or even less frequently. The motor vehicle, developed by Karl Benz in 1886 and mass produced by Ford in 1908, would really only change the pattern of life after the First World War (1914 - 1918).

Another advantage of the nostrum was that the chemist knew precisely the composition of the medicine, whereas commercial medicines were often secret remedies accompanied by unsubstantiated claims of efficacy and protected under the Medicines Stamp Duty legislation (from 1812 until 1941). Details of some proprietary medicines could, in the late 1800's, be found in publications such as the *Chemist and Druggist.* In the late 19th century, when price-cutting of patent medicines in the larger stores was rampant, the greater profit margin on the successful counterprescribed medicines ensured their popularity amongst pharmacists and such medicines would be frequently in considerable local demand for common conditions such as coughs and colds, digestive disorders, aches and pains, debility states, nervous disorders, chilblains, toothache, etc. and could therefore be safely prepared in bulk as stock remedies.

But how did the chemist and druggist obtain his knowledge of medical conditions and appropriate formulations?

In 1890 the normal route of qualification as a pharmacist was a long apprenticeship, probably a period of journeymanship and finally compulsory external examination as required under the provisions of the Pharmacy Act, 1868. Attendance at college courses was an optional extra. Apprenticeship could take up to 7 years and the amount and quality of training given varied considerably depending as it did on the academic ability, professional integrity and experience of the apprentice-master. Journeymanship or the "improver" stage was a variable period of increasing experience often in another establishment and another town. A preliminary examination, referred to as "the Classical Examination", was a test of the candidate's competence in Latin and mathematics, ensuring that the student had "a sufficient acquaintance with the Latin language to enable him to translate the *Pharmacopoeia* and physicians' prescriptions, and that he was conversant with the simple rules of arithmetic". Further examinations were normally held in London or Edinburgh. Although there were some classes in pharmaceutical subjects in the larger towns and cities e.g. London, Liverpool, Leeds, Newcastle, the apprentice in a provincial town often undertook private study in order to prepare for the prescribed oral examinations held in a strange place amongst strange people, a truly traumatic experience for the small-town lad! The "Minor" examinations comprised materia medica and botany (simple pharmacognosy embracing the visual recognition and oral description of commonly used crude drugs of natural origin laid out before the candidate, discussion of their sources, nature, properties, etc.) chemistry (the chemicals listed in the current *British Pharmacopoeia*, their characteristics,



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methods of preparation, important reactions, stability, etc.) and Latin, including the ability to decipher prescriptions usually written in abbreviated form and to write such prescriptions in fully extended form. Successful candidates could register with the Pharmaceutical Society and thereafter practice legally on their own account and also, until the passing of the Pharmacy Amendment Act in 1898, could become Associates of the Pharmaceutical Society of Great Britain; post-1898 such persons could become Members of the Pharmaceutical Society voluntarily; compulsory membership was not introduced until the 1933 Pharmacy and Poisons Act .

Apprenticeship and examinations completed, how competent was the chemist and druggist, or, if in a minimum of four months from the "Minor" examination he had passed a more advanced mainly oral "Major" examination, how competent was the the pharmaceutical chemist? As compulsory college courses and written examinations did not happen until 1933 and physiology and pharmacology instruction was not mandated until two years later, how did the newly qualified practitioner of pharmacy gain his skill and exactly what type of practice did he pursue?

It is difficult to be certain because few records are extant in their entirety. One needs to know how good the initial apprenticeship training was. Did the apprentice attend classes and, if so, what type of classes? What types and numbers of reference books, if any, were available in the work place and did the apprentice have time to consult and study such books? Were there several apprentices and did they collectively discuss the problems of their work? We do not know although it was frequently reported that the apprentice was a form of cheap labour, working very long hours for little or no reward. Tangible evidence of the work undertaken can be found in the formularies collated by young apprentices and carried by them into subsequent shops or in the formularies compiled or extended by newly qualified young chemists and druggists building up their own businesses.

## A Yorkshire Formulary, 1885 - 1927

I have been fortunate enough to study a formulary found in a chemist's shop in Bradford Road, Birkenshaw, West Yorkshire, a small township in semi-rural surroundings between Bradford and Batley. The pharmacy was operated initially by George Walker M.P.S. who tellingly advertised himself as"Chemist and Druggist by examination" and apparently had also owned a pharmacy in Northgate, Dewsbury in 1885; he retired at the age of 84 in 1938 and the Birkenshaw shop passed into the hands of Edwin Saville Myers M.P.S. and then was sold to the company directed by William Henry Chanter F.R.Pharm.S. in 1982. Recently the business changed hands again on Mr. Chanter's retirement.

The formulary comprised at least 254 pages and included about 545 handwritten formulae accompanied by some 409 formulae cuttings and a few general comment observations from the then current issues of the *Chemist and Druggist.* Dated cuttings e.g. 15th. July 1885; 3rd. September 1887, and dated personal prescriptions e.g. 4th. March 1886; 10th. June 1887; 14th. February 1898; 2nd. January 1902; 11th. September 1917; 17th. February 1928, indicate the period. Authorship is difficult to assign as the handwriting pattern varied. Appended pricing for many preparations clearly indicated that this was a working collection, not a hobby, and occasionally the inclusion of customers' names and addresses and pricing codes confirmed that the formulary was indeed in regular use.

### Analysis of Recorded Formulae

| | Handwritten Formulae | | Journal Cuttings Formulae | |
|---|---|---|---|---|
| | Number | Percentage | Number | Percentage |
| Medical | 316 | 57.98 | 224 | 54.77 |
| Cosmetic | 69 | 12.66 | 100 | 24.45 |
| Veterinary | 78 | 14.31 | 10 | 2.44 |
| Domestic | 82 | 15.05 | 75 | 18.34 |
| Total | 545 | | 409 | |

Closer inspection of the 545 handwritten entries reveals 316 medicinal (57.98%), 69 cosmetic (12.66%), 78 veterinary (14.31%) and 82 domestic (15.05%) entries whereas the 409 cuttings comprised 224 medicinal (54.77%). 100 cosmetic (24.45%), 10 veterinary (2.44%) and 75 domestic (18.34%) entries (Tables 1 and 2). This shews that the supply of medicines was the most important aspect of the small-scale manufacturing undertaken. Mixtures and pills were the dominant dosage forms as compressed tabletting, invented by William Brockenden in 1843, promoted by Burroughs Wellcome and Company with their *Tabloid* brand from 1884 and furthered by the development of the prototype rotary tablet press by Allen and Hanbury's in 1903, would not dominate the scene of pharmaceutical practice until the invention of sophisticated multi-punch tabletting machines, better methods of granulation and disintegration and reliable procedures of evaluation in the mid-20th. century.

Perusing the formulations one realises that considerable skill was necessary if good, stable products were to be prepared. Quantities were expressed in the Apothecaries System or in Avoirdupois weight or both, and dog Latin was generally used, offering a certain air of professional mystique.

The 79 mixtures offered treatments for a variety of ills. For example, the prescription for Stomach Bitters:-

**Stomach Bitters** **Crossland**

| | | |
|---|---|---|
| Rad. Gentian Incis. | | |
| " Calumbae | ãã 2 oz | Divide into 2 parts and |
| Quassia Chips | | boil with 2 quarts water |
| Bogbean | | to 1 quart |
| Wormwood | ãã 1 oz. | |

Wineglass every morning.



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This mixture was obviously prepared on the premises and comprised a decoction of the bitter roots of European Gentian (*Gentiana lutea* L., family Gentianaceae) and East African Calumba (*Jateorhiza palmata* Miers, family Menispermaceae) suitably cut or sliced, the chipped bitter stem wood of Jamaican Quassia (*Picroena excelsa* (Sw.) Planch, family Simarubaceae) and the herbs, European Bogbean or Buckbean (*Menyanthes trifoliata* L., family Menyanthaceae) and European Wormwood (*Artemisia absinthium* L., family Compositae). Containing bitters which would stimulate the flow of gastric juices by reflex action, and herbal, carminative, volatile oils, the mixture, although tasting unpleasant, was quite effective. The retail price of k/- per bottle indicated an in-house pricing code, possibly "Kumberland" but, so far, this has not been satisfactorily unravelled.

Stomach and intestinal upsets often sent customers to the pharmacy with symptoms including diarrhoea; suitable cures were fortunately recorded in the formulary:-

**Diarrhoea Mixture**

| | |
|---|---|
| Creta prept. | |
| Pulv: Conf. Arom. ãã | ʒ x |
| Pulv: acaciae | ʒ j |
| Sacch: alb | ʒ iifs |
| Ol: carui | m 30 |
| Spt: Amm. Aromat | ʒ x |
| Tinct: Opii | ʒ viifs |
| Aquae | ad 40 oz. |

The absorbent and antacid, prepared chalk, together with powdered aromatic confection, and the soluble white sugar were mixed with the suspending agent, powdered gum acacia (the powdered, dried, gummy exudation from the East African *Acacia arabica* Willd., family Leguminosae). Aromatic confection (London Pharmacopoeia, 1836) was a finely powdered mixture of aromatic plants including cinnamon bark, nutmeg kernel, clove flower buds, husked cardamom fruits and saffron stigmas together with prepared chalk and sugar. Triturating the mixed powders with water yielded a suspension to which the carminative oil of caraway, the stimulant aromatic spirit of ammonia or Sal Volatile, and the analgesic and intestinal muscle relaxing tincture of opium were added before adjusting the volume of the final product. Opium, the dried latex obtained from capsules of the lilac poppy *Papaver somniferum* L., (family Papaveraceae), yields the alkaloids noscapine and papaverine which are effective anti-diarrhoeal agents. Therefore this mixture, too, was and is effective.

Opium mixtures are not advisable for small children and the formulary wisely offers a similar mixture without opium. Tincture of Kino (prepared from the dried juice from the trunk of the Indian tree *Pterocarpus marsupium* Roxb., family Leguminosae), slowly releases astringent tannic acid in the lower part of the alimentary tract.

**Infantile Diarrhoea Mixture**

| | |
|---|---|
| Amm Carb | ʒ i |
| Creta prep | ʒ v |
| Pulv. Conf Arom. | ʒ ij |
| Spts. Am Ar | ʒ i |
| Tr Kino | ʒ ij |
| Aq Menth Pip | ʒ vj |

| | |
|---|---|
| 1 yr. 20 - 30 drops | |
| 2 - 4 yr. ½ teasp. | Adults ½ oz - 1 oz |
| 4 - 8 yr. 1 teasp. | after each liquid motion |

As a more general and quicker treatment of alimentary canal upsets such as hang-overs, the chemist offered this preparation, a formulation of carminatives. Spirits of lavender, prepared from oil of lavender distilled from fresh flowering tops of *Lavandula angustifolia* Mill., (family Labiateae), has anti-colic activity; camphor, originally prepared by distillation of the wood of the East Asian *Cinnamomum camphora* (L.) Nees and Eberm., (family Lauraceae) but, as a result of the work of Haller in 1896 and Komppa in 1903, now usually synthesised, adds anti- diarrhoeal action; the tincture of ginger probably derived from the rhizome of Jamaican *Zingiber officinale* Roscoe (family Zingiberaceae) provided an anti-gripe effect, and tincture of capsicum, prepared from the dried ripe fruits of East African *Capsicum annuum* var. *minimum* (Miller) Heiser, and ether sulphate added to the carminative action. A very similar formulation, referred to affectionately as "Adam's Corpse Reviver", still satisfied our regular customers during my own apprenticeship in 1937.

**Colic, Gripes and Diarrhoea**

| | | |
|---|---|---|
| Spts. Lavand Co | | |
| Spts. Camphor | | |
| Tinct. Zingib | ãã ʒ j | |
| Ether. Sulph | | |
| Tr Capsici | ãã ʒ fs | Misce. |

Capt. cochl. unum parvum quater hor donec dolor alleviatur

The instructions read:- Take one small spoonful four-hourly until the pain is alleviated.

Thus for diarrhoeas, etc., there was a choice available to the pharmacist and he was able to exercise his professional judgement.

Similar comments can be offered concerning the remaining 74 mixtures, one electuary and one linctus, formulations providing treatment for conditions as varied as epilepsy, St. Vitus dance, tic, worm infestation, whooping cough, lumbago, rheumatism, coughs, bronchitis, scarlet fever, cholera and gonorrhoea, etc., or illnesses needing astringent, diaphoretic, diuretic or tonic medicines.

A more complex tonic formulation was the following:-

**Cod Liver Oil Emulsion**

| | | |
|---|---|---|
| Pulv Sacch. alb | 2 oz | |
| Aq Flor Aurant | 1 oz | |
| Ol. Jecori. | 3 oz | |
| Ess. Amygd | gtt j | |
| Brandy | two teaspoonfuls | Yolk of one egg |

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Rub the egg and sugar well together, drop in the Ess. Amygd. add gradually the Aqua Aurant, then little by little the Ol. Jecoris, lastly the brandy.

The chemist, or his apprentice, had to employ considerable digital skill in dispersing the carefully separated egg yolk in finely powdered sugar, then incorporating the flavouring essence of bitter almonds (an alcoholic solution of essential oil of bitter almonds obtained by distillation with water of the cake left after the expression of the fixed oil from the seeds of *Prunus amygdalus* Batsch. var. *amara* Focke, (family Rosaceae), the orange flower water (a dilute solution of oil of neroli obtained by distillation of flowers from the bitter orange tree *Citrus aurantium* var. *amara* L., (family Rutaceae) and then very gradually indeed the Oleum Jecoris Aselli = Oleum Morrhuae, oil obtained by low pressure steam extraction at about 800°C from the liver of the cod *Gadus morrhua* L., (family Gadidae). The resultant creamy emulsion was an effective treatment for under-nourishment of children and adults and for tuberculosis patients as the fishy oil contained the anti-rachitic vitamin D and unsaturated fatty acids and was more palatable than the oil on its own.

That the mass-produced proprietary medicine was, by the 1890's, posing a threat to the chemist and druggist's nostrums is clearly indicated by the formula for an imitation of Beecham's "Phosferine", a popular nerve tonic in the early part of this century.

**Imitation Phosferine**

| | |
|---|---|
| Quin sulph | gr 40 |
| Acid Sulph Dil | ʒ i |
| Acid Phosph Dil | ʒ vj |
| Alcohol or Spt Chlorof | ʒ vj |
| Water to 3 oz | |

Quinine, the bitter principal alkaloid of the stem bark of many cultivated species of Cinchona (family Rubiaceae) from South America and South-East Asia, was valued as a bitter stomachic that could reduce fevers, alleviate painful aches of neuralgia, myalgia and headaches and relieve night cramps. The presence of sulphuric and phosphoric acids ensured stable solution of the quinine sulphate and alcohol and/or chloroform functioned as preservatives. Therefore this "Phosferine" was a successful product.

The pill, of which no less than 43 examples were included amongst the handwritten formulae, was a spherical, individual dose-form, that could ensure that the patient consumed the correct dose of medicament. Much skill was required in preparing pills. The essential medicaments were held together with binding agents such as hard soap, black treacle, confection of rose or soft extracts; the use of acacia and tragacanth gums as adhesives did not become common until early in this century. A mass was formed by beating the ingredients together; it was then rolled into a uniform pipe and divided into equal parts before rounding into individual pills. The drawbacks were that the pills did not readily retain their shape, often did not disintegrate readily and were liable to stick together.

**Gravel and Lumbago Pills**

| | |
|---|---|
| Pulv Rhei E.I. Elect | |
| Sapo Castil | |
| Sodae Bicarb Hds | ãã 1½ oz |
| Ol. Junip Anglic | ʒ iij |

Beat up well; no excipient required.

Rhubarb, the powdered rhizome of *Rheum palmatum* L. and related species of the family Polygonaceae cultivated at altitude in China and Tibet, was valued as a laxative with an astringent after-effect. Oil of juniper, distilled from the dried, ripe fruits of *Juniperus communis* L., (family Cupressaceae), was once commonly used as a diuretic although it is not now advised if pregnancy or renal disease occurs. Conversion of sodium bicarbonate to carbonate increases the alkaline reserve of the plasma, thus encouraging greater excretion of urine which would also be rendered less acid. Therefore this preparation would have alleviated the patient's uncomfortable symptoms.

Another pill certainly would not have satisfied today's trade description legislation.

**Castor Oil Pills** (so-called)

| | |
|---|---|
| Pulv. Aloes Socot | 1 oz |
| Pulv. Jalap | |
| Pulv. Rhei E.I. | |
| Pulv. Sapo Cast | ãã ½ oz |
| Pulv. Zingib | ʒ j |
| Pulv. Sodae Bicarb | ʒ ij |
| Pulv. R. Podophyll. | ʒ ij |

Excipient Theriac.

It was called "Castor Oil Pills" but was really compounded with the drastic purgatives aloes, rhubarb, jalap, and podophyllum. Aloes was then in common use, being prepared by evaporating to dryness the liquid draining from cut leaves of the Liliaceous South African (Cape) and Caribbean (Curacao) *Aloe* species; rhubarb (*v.s.*) also contains anthracene purgative glycosides but Mexican jalap tubercles, obtained from the Convulaceous vine *Ipomoea purga* Hayne, and American May-Apple rhizomes, gathered from *Podophyllum peltatum* L. (family Berberidaceae), yield powerfully purgative glycosidal resins. To counter the uncomfortable griping action of this combination, ginger was included. Sodium bicarbonate once again yielded an alkaline diuretic action. As the Castile or hard soap used as an excipient for resinous substances and volatile oils was not entirely satisfactory, black treacle was also added to produce a suitable mass but the resultant pills were probably not very hard.

Other pills included various laxative treatments, female pills, nerve pills, pills for epilepsy, diuretic pills, stomach pills, etc.

Skin complaints were apparently quite common in Victorian times and suitable treatments were listed for itch, ringworm, burns and eczema. A typical formula is recorded for the treatment of eczema.



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**Eczema Ointment**

| | |
|---|---|
| Acid Salicylic | |
| Sulph Praecip | |
| P. camphor | ãã gr 15 |
| Ol. Cadi | 150 m |
| Zinci Oxidi | ʒ iij |
| Vaseline | 1 oz |

The combination of salicylic acid (fungistatic and bacteriostatic), precipitated sulphur (mildly antiseptic), zinc oxide (soothing and protective) and camphor (rubifacient and mild analgesic) was effective. Cade oil, a dark reddish-brown or almost black oily liquid with an empyreumatic odour obtained by the destructive distillation of the wood of *Juniperous oxycedrus* (fam. Cupressaceae), was once popular as a local antiseptic application for psoriasis and eczema. Again considerable skill was needed to incorporate the oil into the mixed fine powders and then the oily powder into the vaseline to produce a first class ointment.

Other ointments recorded included blistering ointments functioning as counter-irritants, yellow mercuric oxide golden eye ointment, astringent pile ointment, emollient marshmallow ointment and lead and mercury ointments.

Liniments for aches and pains of rheumatic, fibrositic, neuralgic and related conditions, sores and chilblains, were popular. Therefore, soap liniment, also known as Opodeldoc, appeared in the formulary.

**Lin: Saponis Mollis**

| | | |
|---|---|---|
| Sapo Mollis | lb j | solve in 4 lbs Aqua Bullient |
| Gum Camph | 4 oz | |
| Ol Rosmarini | ʒ ij | |
| Sp Vini Mr 4 IL | mix and add. | Prod 10½ lbs |

Such a liniment was a pleasant smelling rubefacient with a mild analgesic action due to the camphor. The soft soap was dissolved in boiling water and then cooled. Camphor and the aromatic oil of rosemary were dissolved in the alcohol (spirit of wine). Although not stated in the formulary, it is probable that this liniment was put aside for about 7 days and then strained to remove insoluble deposits arising from the soap.

One intriguing entry concerns the so-called Whitworth Bottle or Whitworth Red Bottle; no less than 5 variations were presented but, as the appended examples illustrate, the more pharmaceutically demanding first recipe was ultimately replaced by the simpler second formulation.

**Whitworth Bottle**

| **First formula** | | **Second formula** | | |
|---|---|---|---|---|
| Spt. Vini Rect | Oj | 3.0 | Spts. Vini Rect | ʒ iij |
| Rad Anchus | ʒ ij | 10 | Tr Lavand Co | ʒ ij |
| Rad Sanderi | ʒ j | 1½ | Ol. Origani | ʒ ij |
| | | 3½ | Camphor | ʒvi |
| Infuse two days, shaking the bottle,then add: | | 4.3 | | |
| Ol: Origani | ʒ vj | | C rd oz | |
| Ol: Terebinth | ʒ iii | | | |

Infusion of anchusa or alkanna root (the dried root of European *Alkanna tinctoria* (L.) Tausch., family Boraginaceae) and also red sanders or sandal wood (the heartwood of Indian *Pterocarpus santalus* L., family Leguminosae) in alcohol yields a red solution. Oil of origanum is obtained from the leaves and flowering tops of *Origanum vulgare* L., Wild Marjoram, (family Labiatae) and is similar to Oil of Thyme from the related plants *Thymus vulgaris* L. and *T. serpyllum* L. The major constituent of the oil is thymol, a more powerful antiseptic than phenol, which demonstrates fungicidal and parasiticidal activities. Turpentine, the rectified oleoresin obtained from many *Pinus* species, was used as a rubefacient in liniments for rheumatic aches and muscular stiffness. The modified recipe substituted the red sandal wood-coloured compound tincture of lavender, which also contained oils of rosemary, cinnamon and nutmeg and used camphor instead of turpentine as a rubefacient and mild analgesic. Either preparation would have offered some pain relief in cases of myalgia, neuralgia, fibrositis, lumbago, etc. Significantly the last recipe had a suitable price code appended on the left

Lotions were few in number but included lead and opium lotion, Gowland's mercury lotion, sulphur lotion, resorcin eczema lotion, a lead and zinc sulphate eye lotion and this simple carbolic antiseptic treatment for insect bites:-

**Lotio for Insect Bites**

| | |
|---|---|
| Acid Carboli pur No 1 | ʒ j |
| Glycerine | ʒ iv |
| Aq ad | ʒ viij |

Glycerol in the formulation reduces the severity of the local action of the carbolic acid (phenol).

The smelling bottle, obtained at the chemist's shop, was an essential item in the Victorian lady's handbag. For hysteria, faintness and collapse, ammonia prompts a reflex action on the medullary centres via the sensory nerve endings, thereby stimulating respiration, accelerating the heart rate and causing some vasoconstriction.

**Essence for Smelling Bottle**

| | | |
|---|---|---|
| Alcohol Ammon | ʒ vj | |
| Ol: Santal Flav | | |
| Ol: Caryoph | ãã | ℈ i |
| Ol: Lavand | | ℈ ii |
| Croci | | q.s. |
| Ess. Moschi | | ʒ ij |

This smelling bottle mixture was suitably perfumed with sandalwood, clove and lavender oils; essence of musk, derived from the dried secretion of the preputial follicles of the Central Asian musk deer *Moschus moschiferus* L., was included as the perfumery fixative, and the product was coloured with saffron crocus, colouring matter obtained from the floral stigmas of the Iridaceous European plant *Crocus sativus* L.. Smelling bottles remained popular well into the present century and are still available.

Tooth preparations comprising powders, liquid dentifrices, pastes and tinctures were part of the stock in trade of the



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chemist and druggist at the turn of the century. The convenient collapsible tube for pastes and ointments was still in development towards the end of the 19th century, so preparations manufactured in-house were still in demand, including a surprising toothache tincture containing the mild local analgesic creosote obtained by the distillation of wood tar and anti-neuralgic opium in a vehicle comprising the dental obtundent camphorated chloroform.

**Toothache Tincture**

Liq Opii: Sedat
Creosote ãã m xx
Camphorated Chloroform ʒj

In a semi-rural environment in an era when the horse provided most transport, it was not surprising to encounter veterinary medicines in the pharmacy. The handwritten formulae included 78 veterinary preparations mainly for horses but also for cows, sheep, pigs, dogs and hens. Some 40 medicinal products for cuts, hair growth, sore and bare back conditions as well as tonic, cough, colic and fever treatment emphasised the importance of the horse in pre-motor car Britain. A typical example is the horse ball, a large pill massed with honey or treacle.

**Alterative Horse Ball Mass** Fletcher's groom

| | | |
|---|---|---|
| Pulv. Potass Nit | 2½ oz | |
| Pulv. Resin Flav | 2½ oz | |
| Pulv. Antim Opt | 1½ oz | (Crocus) |
| Pulv. Zingib (2) | 2 oz | |
| Pulv. Camphor | 1 oz | |
| Pulv. Antim Tart | 1 oz | |
| Pulv. Gentian | 1 oz | |
| Ol. Cloves | ½ oz | |

Mix with honey into a mass for pills

The vague term alterative indicates a medication stimulating the renewal of the tissues to normal efficiency. The recipe given combines many properties including diuretic (potassium nitrate), diaphoretic and reflex expectorant (antimony salts), irritant and carminative (camphor), antigriping and anti-spasmodic (ginger and cloves) and bitter, appetite stimulating (gentian). The terebinthinate resin probably contributed to the mass formation.

The formulary indicates that the veterinary side of the business extended to the manufacture of grooms' ancillary items such as breeches paste, harness blacking, gig apron dressing, boot-top dressing, etc. Such is progress that by 1930 the veterinary side of the business had virtually disappeared.

Although proprietary cosmetics were gradually gaining popularity, the purchase of home-made cosmetics was quite common. Therefore the formulary includes 69 handwritten and 100 press cuttings of cosmetic formulae including perfumes, lotions, creams, toilet waters, hair preparations, etc. Typical examples are a Victorian favourite, Best Lavender Water, and cold cream.

**Aqua Lavand Opt**

| | | | |
|---|---|---|---|
| Spts. Vini Rect | 30 oz | Ol. Caryoph | m xxiv |
| Ol. Lavand. Ang | ʒ iii | Mel. Anglic | ʒ iij |
| or | ʒ ifs (better) | Ess.Mosch | ʒ fs |
| Otto Rosae | m iij | Ol. Neroli | m iij |
| Ol. Limon | m xxiv | Ol. Myrist. | m ij |
| Aq. Mollis | ʒ ij | Ess. Ambergris | ʒ ifs |

Macerate for 7 days.

This combination of lavender, rose, lemon, clove, orange flower, and nutmeg oils with ambergris and musk essences was mixed with honey, soft water and alcohol and permitted to stand for at least one week before straining and bottling.

**Cold Cream (Squire's)**

| | |
|---|---|
| Cera Alb | 2 oz |
| Cetaceum | 2 oz |
| Ol. Amygd. D. | 12 oz |
| Aq. Rosae | 9 oz |
| Otto q.s. | to perfume it |

Melt together oil, cetaceum and wax by a water-bath, then gradually add the Aq. Rosae and stir until cold.

Typical of creams manufactured in-house, this product required skill and great cleanliness if the result was to be a pleasant, smooth, rose perfumed cosmetic cream. The basis was beeswax (from the honeycomb of the hive bee *Apis mellifera* L., family Apidae), spermaceti (the solid wax obtained from the mixed oils of the head and blubber of the sperm whale *Physeter macrocephalus*, family Physteridae), and sweet almond oil obtained by expression from the seeds of the Mediterranean Rosaceous tree, *Prunus communis* Arcang. var. *dulcis* Schneider. The rose water was added gradually to the melted base with constant stirring in order to avoid lumpiness, and the Rose Otto was added as late as possible to prevent loss by evaporation.

Also amongst the formulae are 82 handwritten and 75 press cutting entries concerning domestic articles such as soft drinks, cleaning powders, pastes and polishes, disinfectants, vermin killers, inks, etc. The chemist used his versatile art to produce items such as this baking powder,

**Baking Powder**

| | | |
|---|---|---|
| Acid Tart | 8 oz | 1 |
| Soda Carb | 9 oz | 1¼ |
| Farina | 10 oz | 2¾ |
| | Special Price | 5.0 |

or this desirable 'best household spice' containing pimento (allspice), cinnamon or cassia, clove, mace, nutmeg and caraway:-

**Allspice Opt.**

| | | |
|---|---|---|
| Pulv. Pimento | 4 oz | |
| Pulv. Cinnam or Cassia | 4 oz | |
| Pulv. Caryoph. | 2 oz | |
| Pulv. Maces | 1 oz | |
| Pulv. Nucis Mosch | 1 oz | 4d an oz |
| Pulv. Carui Opt. | 4 oz | |



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The powder making and packing skills of the pharmacist were also amply used in the preparation of beverages. For example, ginger beer powders required careful mixture of powdered sodium bicarbonate and powdered ginger and incorporation of essence of lemon before gradual admixture with the white sugar. Separate packaging of the alkaline ginger powders and the tartaric acid components and storage in a dry place ensured satisfied clients.

**Ginger Beer Powders**

| | | | |
|---|---|---|---|
| (1) | Sodae Bicarb | ʒ xiv | 24 gr |
| | P. Zingib | ʒ iv | |
| | Ess. Lemon | m 48 | |
| | Sacch Alb | 14 oz | |

Mix and divide into 48 pulv of ʒ ij ə ij

(2) Acid Tartaric ə j

Finally, some of the domestic products, although quite effective, were not pleasant. This silvering solution comprised silver nitrate in nitric acid mixed with mercury in Scheele's prussic acid.

**Silvering Solution.** To clean plated Harness

| | | |
|---|---|---|
| Argent Nit | gr x | |
| Acid Nitric | ʒ ij | Mix |
| Hydrarg | ʒ fs | |
| Acid Prussic Scheele | ʒ ifs | Mix |

Mix the two and allow fumes to escape before bottling.

One hopes that care was taken as the fumes would be extremely toxic; there was no Safety at Work Act in 1890.

Careful study of the formulary reveals a large number of quite effective formulae offering treatments for a wide range of medical conditions. We were not able to discover the precise sources of these formulations. Some were probably copied from physicians' successful prescriptions, others were garnered from professional textbooks and journals (indicating that the best chemists did read journals) and a number may well have been skilfully formulated by the chemist himself. The practitioners of the time could not and did not understand the disease conditions encountered, their abilities as diagnosticians were based on limited experience and patient self-diagnosis and they could not comprehend the true significance of the range of drugs in their charge, yet, by trial and error borne of long experience and often handed down from master to apprentice, they served their clientele conscientiously to the best of their ability and laid the foundations of respect for our profession, a respect that has enabled this particular pharmacy to carry on a successful unbroken tradition up to the present time.

P.S. - Of course there was bound to be one preparation that failed despite the cleanliness and vascular stimulation encouraged in the recipe!

**Application for Baldness**

| | |
|---|---|
| Rum | 500 parts |
| S.V.R. | 75 parts |
| Aq. Dest. | 75 parts |
| Tr Canthar | 3 parts |
| Potass Carb | 3 parts |
| Ammon Carb | 5 parts |

Mix the liquids, then dissolve the salts and filter. After having saturated the bald part for some minutes with this liquid, wash the head with water.

(N.B. The author is bald)

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**Table 1** **Handwritten Formulae**

**Medical**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mixtures | 79 | Lotions | 9 | Injection for Gleet | 1 | Infant Mixtures | 5 |
| Liniments | 16 | Chloroform Emulsion | 1 | Infant Powders | 5 | Embrocations | 3 |
| Eye Paint | 1 | Balsams | 2 | Powders | 26 | Golden Eye Ointment | 1 |
| Cordials | 3 | Gargle | 1 | Ointments | 19 | Electuaries | 5 |
| Drops | 12 | Cerates | 2 | Syrups | 15 | Lozenges | 1 |
| Pastes | 4 | Cod Liver Oil Emulsion | 1 | Pills | 43 | Nasal Douche | 2 |
| Linctuses | 3 | Whitworth Bottle | 5 | Tooth Powders | 6 | Oils | 2 |
| Odontine | 1 | Tinctures | 5 | Foot Preparations | 1 | Astringent Gum Lotion | 1 |
| Spirits | 1 | Plasters | 2 | Tooth Paste | 3 | Lemon Kali | 3 |
| Glycerin/Calc/Amygd. | 1 | Liquid Dentifrice | 1 | Tannic acid solution | 1 | Camphor Ice | 1 |
| Toothache Tincture | 4 | Fruit and Health Salts | 2 | Coloured Tartaric Ac. Xtals | 1 | Camphorated Chalk | 2 |
| Magnesium Aperient | 1 | Cannabis, spermatorrhoea | 1 | Glycerin & Borax | 2 | Eff. Magnesium Citrate | 1 |
| Vinegars | 2 | Liq. Blister Chilblain Tinct | 1 | Collodion | 1 | Fumigating Pastilles | 1 |
| Cough Candy | 1 | Mithridate (1888) | 1 | Fumigant | 1 | | |



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**Table 2** **Collected Journal Formulae**

### Perfumes and Toiletries

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Scent | 13 | Waters (Eau de) | 4 | Incense | 1 | Essence | 2 |
| Sachet Powder | 1 | Violet Powder | 2 | Glycerol & Cucumber Crem | 1 | Facial Emulsion | 1 |
| Milk of Roses | 2 | Hand Lotion | 1 | Rose Lip Salve | 2 | Cold Cream | 3 |
| Shaving Paste | 1 | | | | | | |

### Hair Preparations

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Brilliantine | 1 | Hair Wash | 12 | Bay Rum | 1 | Hair Tonic | 7 |
| Hair Dye | 2 | Baldness Cure | 1 | Pomade | 8 | Hair Oil | 1 |
| Hair Cream/Grease | 2 | | | | | | |

### Veterinary

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Poultry Powder | 3 | Roup Pills (Hens) | 1 | Dog Mange Lotion | 4 | Lamb Mixtures | 3 |
| Horse Balls | 17 | Dog Balls | 1 | Foot-Rot Mixture | 2 | Horse Powdres | 9 |
| Dog Pills | 2 | Running Thrush | 1 | Horse Blister | 1 | Dog Liquid Tonic | 1 |
| Cough Powders | 2 | Horse Drink | 6 | Sheep Fly Powder | 1 | Pig Powder | 3 |
| Hair Growth (Horse) | 1 | Cow Balls | 1 | Cleansing Drink | 2 | Bare Back Ointment for Horse | 1 |
| Cow Drink | 3 | Fellon Drink | 3 | Cow Draught | 1 | | |
| Horse Lotion | 2 | Cow Udder Ointment | 1 | Veterinary Grease | 1 | Cordial Drink | 1 |
| Harness Blacking | 1 | Breeches Paste | 1 | Boot-top Blacking | 1 | Waterproof Dressing for Gig Aprons | 1 |

### Domestic

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Gingerette/Cordial | 2 | Lemonade (Pop) | 1 | Sassae | 4 | Peppermint Drink | 1 |
| Lemonade Powder | 1 | Brandy | 3 | Ginger Beer Powder | 2 | Lemon Squash | 1 |
| Raspberry Brandy | 1 | Ginger Beer | 1 | Fruit Citrate | 1 | Wine | 2 |
| Pickling Spice | 6 | Baking Powder | 4 | Esau's Beef & Pea Soup | 1 | Disinfectant | 3 |
| Washing Liquor | 1 | Bleaching Liquor | 1 | Anti-Smut Powder | 2 | Vermin Killer | 1 |
| Rat Poison | 1 | Camphor Balls | 2 | Insect Powder | 2 | Bug Poison | 1 |
| Furniture Polish | 1 | Plate Powder | 3 | Wall Colours | 4 | Furniture Paste | 4 |
| Brass Paste | 1 | Show Bottle Colours | 2 | Furniture Cream | 2 | Silvering Solution | 1 |
| Fire Colours | 6 | Polish Reviver | 1 | Steam Boiler Cleanser | 1 | Ink | 5 |
| Gilp for Wood Graining | 1 | Liquid Gum | 1 | Varnish | 1 | Battery Acid | 1 |
| Brush Polish | 1 | | | | | | |

### Medical

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mixtures | 47 | Preston Salts | 1 | Ear Wax Drops | 1 | Electuary | 1 |
| Asthma Powder | 1 | Black Eye Paint | 1 | Lotions | 8 | Cough Lozenges | 3 |
| Eye Lotion | 1 | Embrocation | 1 | Aromatic Water | 1 | Toothache Drops | 4 |
| 0ils | 5 | Powders | 9 | Toothache Snuff | 1 | Balms | 2 |
| Syrups | 18 | Toothwash | 1 | Neuralgia Oil | 1 | Draughts | 4 |
| Infant Soothing Mixt. | 1 | Neuralgia Tincture | 1 | Decoction (Aloes) | 1 | Infant Fever Drop | 1 |
| Liniment | 2 | Linctus | 1 | Deodorised Tinct. Iodine | 2 | Ointments | 10 |
| Glycerins | 4 | Glycerin Jelly | 3 | Pill Excipient | 1 | Foot Powder | 1 |
| Indian Brandee | 1 | Wart Paint | 1 | Corn Paints | 3 | Malt Extract Lozenge | 1 |
| Domestic Salve | 1 | Bunion Soap | 1 | Gelatin Medicated Sheet | 1 | Fruit Salt | 1 |
| Chilblain Paint | 5 | Gripe Water | 1 | Chilblain Lotion | 1 | Worm Cures | 3 |
| Liq. Cocci | 2 | Chloral Cleam | 1 | Analgesic Tincture | 1 | Malt Extract Liq. | 1 |
| Court Plaster | 1 | Sore throat Drops | 1 | Cod Liver Oil Preparation | 10 | Arnica Jelly | 1 |
| Emulsions | 7 | Tinctures | 14 | Antipyrine Preparations | 5 | Extracts | 2 |
| Curare Injection | 1 | Cantharides Plaster | 1 | Coal Tar Solution | 1 | Salol Preparations | 4 |
| Concentrated Glycerin of Salicylic Acid | | | 1 | | | | |

Additionally from the journals, were a hundred formulae for perfumery, toiletries and hair preparations, of which 55 were for perfumes. Veterinary recipes amounted to ten and domestic ones to 75; these included Coca Wine (1), Sausage Spice (1), Custard Powder (1), two Fly Papers, three Vermin Killers and a Cockroach Bait. There were too, Seven Inks, a Glove Cleaner (1), Gold Paint (1), Artificial Ivory (1) and a leather Reviver, as well as four Polishs.



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# The Medical Practice of John Hall, Shakespeare's son-in-law.

M.P.Earles

In 1643 James Cooke, a surgeon attending Parliamentary troops guarding the bridge at Stratford-upon-Avon, called on the widow of the Stratford physician Dr John Hall to purchase medical books belonging to her late husband. Among the books he acquired were two manuscripts written in Hall's hand. One of these manuscripts has survived and is kept in the British Library catalogued as the Egerton MS 2065.

James Cooke translated and edited the manuscript and published it in 1657 under the title *Select Observations on English Bodies.* A second edition appeared in 1679. Facsimile pages of the second edition are included in the book *John Hall and his Patients* published by The Shakespeare Birthplace Trust and Alan Sutton in 1996. The authors are, Dr Joan Lane who has identified Hall's patients and set the manuscript in its social context, and Dr Melvin Earles who comments on the prescriptions and other treatments.

John Hall was the son of a physician and born in Bedfordshire about 1575. He went to Cambridge becoming an MA in 1597. In 1607 he married Susanna Shakespeare in Stratford. Nothing is known of the ten years between Cambridge and his marriage but the indications are that he went abroad to study medicine. In Stratford he built up a successful medical practice. The majority of his patients lived within 15 miles of the town but for patients of rank he travelled long distances: to Worcester to treat Bishop Thornberry, to Ludlow to attend the Earl of Northampton. His patients came from every social class and although he was a Protestant his practice extended to the Catholic families of the area. Unfortunately the manuscript throws no light on his father-in-law's last illness or gives any indication that Hall was the source of William Shakespeare's medical knowledge. Hall died in 1635, the circumstances pointing to a sudden illness.

The manuscript is a collection of 178 cases. Each is headed with the name of the patient, sometimes the age is given, sometimes the date of the treatment, sometimes the place of residence. On occasion the status or occupation is recorded, e.g. Hudson is described as a poor man, Browne as a Romish priest. This data is followed by the list of symptoms followed by the treatment which consisted principally of prescriptions. Hall was a devout man and the record of a treatment often ends with a reference to the Grace of God or some similar expression to indicate that his meagre powers alone were not sufficient to bring about a cure.

Cooke wrote that he was able to make his translation being "somewhat acquainted with the Author's conciseness, especially in the Receipts [prescriptions], having had some intimacy with his apothecary." In books on the Shakespeare circle which refer to Hall this is usually taken to mean that Hall's apothecary assisted Cooke in the translation, but Cooke merely states an acquaintance with the apothecary. In fact John Court, who was Hall's apothecary, died in 1639 before Cooke acquired the manuscript. There are some errors in the translation and Cooke occasionally throws in a comment of his own. The major problem for the modern reader is that Cooke was writing before the development of a systematic botanical and chemical nomenclature so that identification is sometimes difficult. The plant names are the Latin names of the contemporary herbals and the common English names, some of which refer to more than one species. Chemical names are from alchemical sources and the works of Paracelsus: *crocus martis* for iron oxide, litharge of gold for yellow crystalline lead oxide, zinc sulphate appears in Cooke as both white copperas and white vitriol.

Hall's system of medicine was essentially that of Galen and was based on the concept that the body is composed of four cardinal humours: Blood with hot and wet qualities; Phlegm, cold and wet; Black Bile, cold and dry; Yellow Bile, hot and dry. The account which follows is a simplified version of a system which in Hall's time was complex and subject to variations.

Each individual and each part of the body had a natural combination of humours. It was a holistic system, the dominant humour determining not only the constitution but also the temperament. Where blood was dominant, the individual was of a sanguine nature characterised by a full habit of body, ruddy complexion with a courageous and hopeful outlook on life. A thin frame and a dark complexion with a meditative, introspective disposition indicated a melancholic constitution associated with black bile. Ill health was the result of a perturbation of the humours. Climate, diet, insomnia, lack of exercise, emotional disturbance could all affect the humours, the resulting illness depending on whether there was an upset in the balance of the humours or whether one or more humours had become morbid or depraved.

Because each person was believed to have an unique normal or healthy humoral composition, any change in that composition resulted in an illness peculiar to the patient. A prerequisite to treatment was a knowledge of the normal constitution of the patient, the physician treating the patient not the disease. In some of Hall's reports he makes a diagnosis that appears to agree with the modern ontological concept of disease as a separate, classifiable entity distinct from the individual. It is obvious, however, that the thrust of his treatment is to treat the individual, to temper the morbid humours and restore the humoral balance.

The condition or movement of the humours determined the symptoms. Fevers were the result of a malignant accumulation of humours causing putrfaction and heat. An excess of phlegm moving down from the head and lodging in the bowels caused a dysentery, if it lodged in the abdomen there was dropsy, an accumulation in the lungs brought a cough and other pulmonary symptoms. Redness of the skin, high pulse, headaches, indicated to the physician that the blood was in excess. A yellowish tint to the skin identified an illness attributable to yellow bile. Nightmares and depression suggested distempered black bile.

Each report of a patient in the manuscript begins with a list of the symptoms. Some symptoms are common to more than



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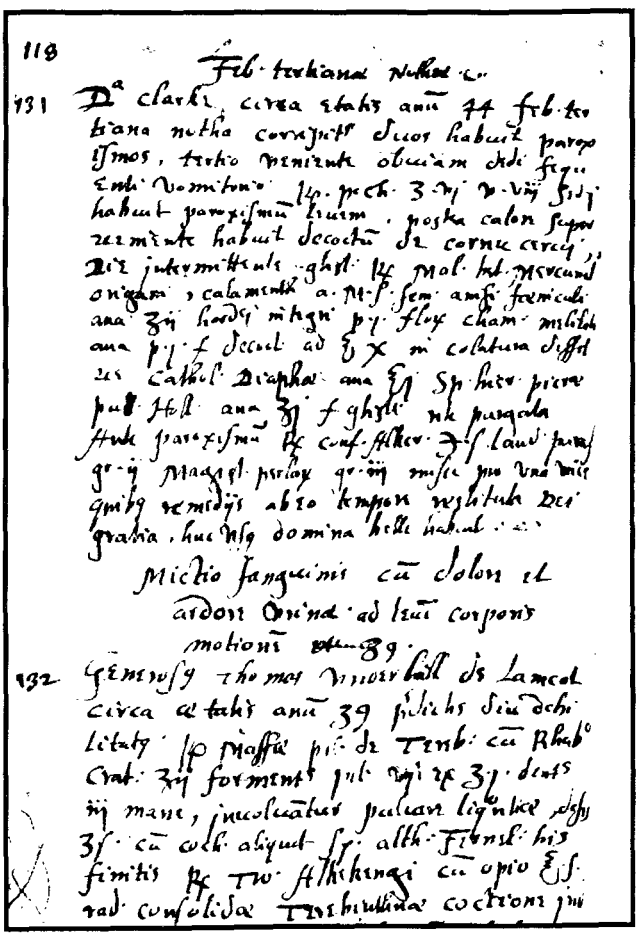
one disease and this makes it difficult to come to a conclusion concerning the illness of the patient. Hall's references to pains in the joints is an example. Whenever Hall is informed of such pains he refers to it as gout. The term gout is derived from *gutta* or drop, and alludes to the defluxion or dropping of a morbid humour into the joint. Synovitis, arthritis, epiphysitis, as well as the disorder due to excess uric acid, would all be recorded as gout by John Hall and his contemporaries.

Therapy followed on logically from the pathology. Humours in excess must be expelled, distempered humours must be tempered. It was necessary to select medicines having qualities opposite to those of the offending humour e.g. a hot/dry drug was deemed best to treat a cold/moist or phlegmatic illness. A medicine had to be chosen that had the appropriate qualities (hot, dry, wet, cold) and in the right degree as classified by Galen. A medicine hot in the first degree caused the patient to sweat and reduced pain. To cut compacted humours it was necessary to employ a medicine in the third degree. A medicine hot in the fourth degree raised a blister on the skin. Salads, cold and moist in the second degree, tempered unnatural body heat in the summer months.

Various methods were adopted to expel offending humours. Blood letting was one of them and extensively practised although the evidence of the manuscript suggests that Hall was moderate in his use of this method. His favourite method was the purge and he prescribed drugs ranging from the mildly laxative to the vigorously purgative. Agaric he used to expel phlegm, scammony for yellow bile. Senna was believed to expel all humours and when used in the case of Julian West he recorded it "emptied her body from ill humours". A liquid medicine was used to expel humours from the stomach and bowels. If it had to be drawn from remote parts of the body a pill was used because as Culpeper wrote "it stops longer in the body and better able to perform its office." Other methods were emetics, diaphoretics, diuretics and the *fontanelle* where a cut was made in the skin and kept open for long periods to carry off acrid humours. We also find attenuating medicines to thin a humour, alterative medicines to bring about changes in the humour by heating, cooling and drying, incising medicines to cut phlegm and resolvents to disperse humours.

'Rational' drugs in Hall's time were not those containing stabilised, correctly measured active constituents of modern pharmacology but purges and emetics to expel morbid humours, and drugs with the cold, wet, hot or dry qualities believed to temper and regulate. His patients, familiar with the humoral idea (a fact demonstrated by characters in Shakespeare's play), and believing that their illness was the result of humoral changes would have been comforted by cooling drinks in fever, have welcomed hot, spicy remedies to relieve their congested lungs and accepted, albeit unwillingly, purging emetic and sweating regimes. Reported success of such treatments are often attributed to a placebo effect but although this explanation may apply to some of Hall's patients it cannot account for all the cures claimed by Hall.

This leads us to consider what Hall means when he makes the statement which occurs regularly as a *coda* to the report "thus he [or she] was cured" or words to that effect. The evidence indicates that he does not always mean cure in the sense of a successful outcome and a return to full health. A good example is the case of Mr Rogers who was suffering a swelling of the tonsils and was distressed because he could not swallow and had difficulty in breathing. Hall claimed as a result of his treatment (vapour, a linctus and a poultice) "in a nights space he was cured". This must surely refer to the fact that the patient's problem with swallowing had been relieved and not that his acute tonsillitis had been miraculously cured.



A page from Hall's manuscript recording the cases of Dorothy Clark who had a tertian fever and Thomas Underhill who was passing blood in the urine. (Egerton MS 2065, by courtesy of the British Library.)

A successful cure for Hall appears to have been the relief and disappearance of symptoms. William Clavel was said to be "altogether cured of his Gonorrhoea" but this simply meant that the purulent urethral discharge had cleared up. Serious complications may follow as clearly demonstrated in the case of Francis Harvey another of Hall's venereal patients. In some cases the cure was short lived. The consumptive Mary Wilson died within a year. He claimed to have cured Nicholas Fortescue, aged 38 and a great drinker. Fortescue died in the same year he was treated by Hall his symptoms of jaundice and dropsy pointing to cirrhosis of the liver.



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Hall's regimes of treatment were often long and complex. Several preparations were prescribed, many in the polypharmaceutical tradition of Galen, others relatively simple. He also had his favoured remedies which appear regularly in the cases recorded.

For his patients with scurvy he used three scorbutic drugs: scurvy grass (*Cochlearia officinalis*), brooklime (*Veronica beccabunga*) and water-cress *(Nasturtium aquaticum*) all now known to contain sufficient vitamin C to cure the disease. The value of these herbs was known before Hall's time and there is some evidence that they were used by the common people who would have eaten them raw. In assessing John Hall's use of this therapy one must take into account the fact that he rarely prescribed the fresh herb. For example, in the case of the Countess of Northampton he prescribed the drugs in decoctions and medication beers, both preparations involving processes of heating and evaporation that would have destroyed the vitamin content.

The favoured drug for fevers was hartshorn (*Cornu cervi*) which was listed among the numerous animal drugs in the herbal of Dioscorides. Hall used it in the case of Father Browne, a Catholic priest who was critically ill with Ungaric fever, one of the names for typhus. The patient was purged, vomited and bled and then a preparation containing hartshorn was administered. Later prescriptions were of a cordial restorative nature containing crushed gemstones and gold leaf. Hall concluded "By these beyond expectation the Catholick was cured, especially with Decoction of Hartshorne, with which I have cured these and other Feavers in a short time".

The root of paeony as recommended by Galen was prescribed in cases of epilepsy. Other drugs in Hall's manuscript for epileptic conditions were clove gillyflower, mistletoe, betony, hartshorn and powdered human skull. This last drug was also recommended by Galen. Nicholas Culpeper later wrote that betony given with powdered skull "helps palsies and falling sickness". His contemporary Thomas Sydenham was critical observing that he could not see why, if there was specific virtue in human skull, there should not be enough in the patient's own!

The root of bryony occurrs in most of Hall's prescriptions for Mother or hysteria. Rosemary was prescribed when the symptoms of hysteria involved facial convulsions. John Gerard in his *Herball* of 1633 observed that rosemary "comforteth the braine ... and restoreth speech unto them that have the dumb palsie". Esther, Lady Rouse, who had a nervous complaint affecting her neck and face was prescribed rosemary by Hall. Later when her hysteria led to faintness and pains in the head, he prescribed a fume or vapour formed by burning scrapings of horse's hoof mixed with other "stinking things". This treatment appears to be a forerunner of the habit of burning a feather under the nose, and the more recent, bottle of smelling salts.

Black hellebore, *Helleborus niger* or Christmas rose, featured in treatments for melancholy, a term used to describe a variety of mental conditions. Hall prescribed it in the case of Editha Staunton, a girl of seventeen "miserably affected" with melancholy who was afraid her parents and others would kill her. Hall's severe regime of treatment, that must have made her even more miserable, involved enemas used because they would draw melancholy humours away from the brain and the heart to the "more ignoble parts".

Hall's treatment of John Trapp, schoolmaster of Stratford-upon-Avon involved chemical remedies. Trapp, who later became a distinguished scholar, was suffering from a form of melancholy brought on by "much Study", one of the many causes of melancholia. Hall's contemporary Robert Burton in his *Anatomy of Melancholy* (1621) devoted several pages of the treatise to "Love of learning or overmuch study" as a cause of the illness. Hall's treatment of John Trapp involved the use of *Mercurius dulcis* (mercurous chloride or calomel) and *Tartarus vitriolatus* (potassium sulphate). This was only one of two occasions in the manuscript where Hall prescribed Paracelsian remedies but his use of them has led some writers to assume that he was a follower of Paracelsus.

It was a time when there was considerable antagonism between the Paracelsians and the traditional Galenists and Hall's attitude to the two schools is not without interest. A study of the manuscript clearly indicates that his therapy was predominantly Galenic. It is most likely therefore that he may be counted among those English physicians who adopted an eclectic attitude towards the two schools of medicine. These doctors accepted and used some of the remedies of Paracelsus but were not prepared to adopt his doctrines.

These are but a few examples taken from a manuscript which is rich in information concerning the nature of therapy in the early seventeenth century, and of the preparations that called for the art of the apothecary. Because it is a selection of cases deemed to have been successful by John Hall it can only be regarded as a partial glimpse of his medical practice and a biassed account of the success of his treatments. Nevertheless the manuscript remains a document of considerable interest and importance both for its association with the Shakespeare family and as a source of social and medical history.

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**CONTENTS.**



## OBITUARY.

### Leslie G. Matthews. 30.11.1897 - 24.2.1997

An appreciation by Miss Ann Hutton

"Leslie Matthews who died on 24th. February at the age of 99, was a familiar figure to members of BSHP, pre-eminently as the pharmaceutical historian, author of *History of Pharmacy in Britain,* and as founder member and past President of this Society He was a remarkable man who achieved much during his long life. In the Great War he was awarded the Military Medal for bravery in rescuing the wounded in No-Man's Land. He had a distinguished career with Burroughs Wellcome of which he became a Director. In the Second World War, he worked on the Penicillin and Insulin Committees, helping to bring about large scale production of penicillin and ensure the constant supply, under severe war time conditions, of raw materials for the production of insulin. After that war came his outstanding work for the history of pharmacy on the original steering committee and its successor, BSHP. His publications include *History of Pharmacy in Britain, Pharmazeutischer Reisefuhrer, Grossbritannien, The Royal Apothecaries, Antiques of a Pharmacy, Antiques of Perfume, The Pepperers, Spicers and Apothecaries of London in the 13th and 14th centuries, Milestones in Pharmacy, Pharmacists in the Wider World* and *A Regional Guide to Pharmacy's Past,* as well as some 200 papers. His scholarship brought him international recognition.

There is so much to tell about Leslie. He was a humane and civilised man. In the Great War he refused promotion, preferring to continue as a stretcher bearer saving lives, not taking them. This was an experience which coloured the rest of his life: he became strongly opposed to violence. He had many talents. Before enlisting in 1917, he rose at 6 a.m. to learn to drive lorries before going to work in the pharmacy. He read for the Bar whilst fire watching at night in the London Blitz. He played the oboe. He was a Cordon Bleu cook and appreciated fine wines.

I first met Leslie when my sister and I attended a Sotherby's auction. We were two impecunious students looking for a birthday gift for my father. Leslie was there, preparing one of his Saleroom Notes for the *Journal.* He took the trouble to advise us about the various lots and we came away very happily with a 17th. century ointment jar. A few years later Leslie encouraged me to join the BSHP committee and from then on I came to know him and his wife Elspeth, and to appreciate what a remarkable man he was.

He was extremely generous to others. There are many who have memories of particular kindnesses. A diffident request for information or advice would produce an invitation to meet, and he would contribute from his vast knowledge and experience. Though perhaps not suffering fools gladly, he nurtured any spark of enthusiasm or interest. He gave introductions and actively encouraged many careers.

He had a tremendous talent for friendship. He loved the society of like minds, as witnessed by his membership of the Osler Club, the Savage Club, the Society of Antiquaries, the Society of Apothecaries, BSHP, and all the international Societies of which he was an honoured member.

He was treasured by all his friends, as a few of us witnessed on his last trip to Paris eighteen months ago to attend the 32nd. International Congress for the History of Pharmacy. He was always met with a delighted "Ah, Leslie". Everyone was so happy to see him again. All who knew Leslie will remember him with great affection and gratitude.

## THANK YOU.


The British Society for the History of Pharmacy would particularly like to thank Merck, Sharp & Dohme for their support during 1997 in the production of the Society's journal




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# THE ELABORATORY AND STOCKS OF THE SOCIETY OF APOTHECARIES:
## The Making of Medicine over 250 Years.

**Major Charles O'Leary.**

My aim is to tell you something of the companies, or as they were first called 'stocks', which made preparations and medicines, and were run by the society of Apothecaries of London between the 17th. and 20th. centuries.

### Background.

The apothecaries who practised in the City of London were organised as a sub-section of the Grocers' Company, but in 1617 after much politicking the apothecaries broke away, and under the patronage of James I, were granted a charter as a separate Livery Company of the City.

This new company, known as the Society of Apothecaries, was at the beginning formed from the top 125 apothecaries of the City, most of whom had been in the Grocers' Company. Its membership grew quickly as it had the monopoly of the sale of pharmaceutical preparations in the City and immediately around, so apothecaries had to join or leave the trade. It quite rapidly became wealthy, and despite its lowly position in the order of precedence, being only number 58, it became an influential body in the City. It was composed of rich and respected businessmen who sold valuable and indispenable goods and services which could not be obtained elsewhere. In 1632 the Society was rich enough to be able to buy a suitable home which had been a part of the old Dominican friary in the south west corner of the City. It is still there. A set-back was suffered when it was burnt down in the fire of 1666 but the Hall was rapidly rebuilt on the same foundations.

The Society had bought the old guest house of the friars which ran north-south near their church. When the last of the friars was ejected in 1537, the friary was converted into dwellings of varying size, the guest accomodation being made into a rather grand house which entailed little or no major alterations to the building. Like most large city houses of the period, the ground floor was given over to domestic offices and the working areas of the establishment, whilst the first floor was used for living accommodation. The ground floor arrangement was very flexible, its layout and plan frequently changed so that it could be used for many different purposes.

The College of Physicians were in 1617 a long standing and eminent body which was much concerned with the standards of its profession. They were also anxious to ensure that any medical organisation should be under their influence, if not directly under their control. They opposed the foundation of any group which they feared might challenge their own position and were not at all happy when James I brushed aside both their and the City's objection to what he called his new company. The College did not want the standards of entry and medical training to be lowered, and also they ran a pretty tightly closed shop and wished this to continue. From the very start there was a strained relationship between the College and the Society of Apothecaries.

The Society wished to ensure that good quality drugs were available to its members and as early as 1623 they formed a dispensary for compounding what were described as "the more elaborate confections (which containing a great number of ingredients were more liable to adulteration)". Its scope was confined to a few items and its use limited, but it shows the Society's intent to ensure that good quality, unadulterated goods were available. The Master and Wardens of the Society pursued a policy of high standards and frequently carried out inspections of the apothecaries' shops in the City, burning badly made preparations in the streets, fining and censuring the offenders.

### The Companies or "Stocks".

In early times the bulk of the medical preparations were of herbal origin, but by the 16th. century there was much interest in iatrochemistry. Many of the exponents of this art were no more than charlatans but a few were knowledgeable and made valuable contributions to medicine. They were associated together in an organisation called the Society of Chymists and had invented one or two chemical preparations which were accepted as official, for example calomel and mineral acids which were included in the second *London Pharmacopoeia* of 1650. About this time, the College of Physicians set up a laboratory which was placed under the charge of a noted 'chymist', William Johnson. Unfortunately for them, he died of the plague in 1665, despite or perhaps because he was the maker of a popular pill against the disease. The laboratory was destroyed in the Great Fire with the College in September of the next year.

The Apothecaries, spurred on by the Physicians' laboratory, (really a factory to make drugs), the challenge by the 'chymists' to do something for themselves, having sorted themselves out after the Fire, took on the task which had been abandoned by the College. Freemen of the Society were invited to subscribe to a scheme to provide capital for the manufacture and sale of chemical medicines. On 4 January 1672 the first meeting of the seventy subscribers was held, and a set of rules agreed by a committee of management, selected from amongst the subscribers, to run the new organisation named the Laboratory Stock.

The preamble to these rules ran: "Whereas the Compa[ny] of Apothecaries of London have bene publicliquely traduced by the Pseudo Chimists of these tymes for their ignorance of the Spargirick part of Pharmacie to vindicate their reputacions from these scandalous aspersions and also to assure the Colledg of Phisicians their patients and all others concerned that all Chimicall preparacions shallbe skillfully,



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faithfully and exactly made and sold by an Operator of their owne Fraternity at the Apothecaries hall: The Master, Wardens and Court of Assistants of the Company are resolved to errect an Elaboratory at their owne hall which shallbe under the inspecion and Governm[en]t of themselves...."

The total subscribed was £1,205 which included £100 from the Society's common stock. The new committee of management met that same January afternoon. It consisted of 27 members of the Society, and had to include six Liverymen and four Yeomen, so ensuring representation of all levels of the Society. The numbers varied thereafter. Surprisingly a quorum of only five was required to do business, and of these, three had to be Assistants. The Court had pretty tight control over the work of the committee, further ensuring its control by appointing both the treasurer and the operator, and also a past Master to be supervisor. If a subscriber died, his legal representatives were repaid his share with any profits due to him, but at first it was not otherwise possible to withdraw capital; later subscribers were allowed to withdraw with the permission of the Court.

The investors in the laboratory were able to profit in two ways from their investment; they could buy goods for their own businesses at a considerable discount, and they also received a share of the profits. Dividends were paid according to the value of their investment which was a fixed amount.

In 1702 the rules were revised to meet objections from the junior members voiced off and on since 1682, that they provided more of the turnover and received less of the profit than their seniors did. Under the new rules the size of the committee was reduced to 21 and re-named the General Committee of Subscribers. The capital was increased to £2,000 by the issue of £10 shares. These were offered to the Freemen in order of seniority. The shares could only be held on the condition that the buyer bought goods to the value of one third of the shares each year; multiple share holdings were allowed but share holdings could only be assigned with the permission of the Court. If bills were paid by 25 March each year a discount of 5% was allowed. That this was not risk free is evident as the Court also decreed that the Society would be paid 8% of all subscriptions to cover risks.

In the same year as the rules were revised another major event took place. The College of Physicians obtained a contract to supply drugs for a military expedition to the West Indies. This was a blatant breach of the Society's monopoly granted in its charter, and it immediately lodged an objection with the Secretary of State. It was too late to have any effect on the West Indies contract, but it led to the Society being asked to supply the fleet with medicines in the future. Ironically, the threat to the West Indies by the Dutch receded, the fleet and the army never set out, and the Physicians' contract was cancelled. The new request to supply drugs to the Navy caused the Society to review their methods of providing medicines, so that it was decided that an additional joint stock company should be established to meet the need. A new stock company was formed which would maintain a shop or warehouse stocked with every variety of goods that might be needed by ships' surgeons in the Navy. They were required to send a list of their needs to the Society before each expedition and to draw their chests from the Society when these had been filled.

The Articles were sealed on 3 August 1703. Now there were two stock companies working in close proximity, but separately funded and supplying different markets. The Navy Stock began with a nominal capital of £6,000 which was found by issuing 120 shares whose value could be between £30 and £50. Multiple share holding was not allowed at first but if the requisite number of investors had not been forthcoming this rule could have been reviewed. In the event, 99 shares of £50 and 13 of £40 were taken up, thus bringing in £5,470 at the outset so providing enough capital.

The Navy Stock was not very profitable for at least the first forty years of its existence. However, the Laboratory Stock prospered, so well was it doing that in 1713 its capital was reduced to only £2,000. The two Stocks were very closely related and their business Byzantine in its complexity. The controlling committees in both cases were composed of very much the same people, and although nominally directed by the Court of the Society, usually went their own way.

In one way however the Court was firmly in control. At the beginning there was a movement to allow any apothecary to buy ready-made pharmaceutical preparations, but the Court would not allow this and continued in its opposition for many years as they believed it would lead to the apprentices not being trained in the appropriate skills, thus leading to the Society's members being ignorant of their profession. The Society was then still largely composed of pharmacists rather than general practitioners of physic. By 1750 however the balance was nearly even and was rapidly approaching the time when the pharmaceutical apothecary would be in the minority.

From 1734 two-rated catalogues, giving the prevailing prices were prepared and revised monthly by the committee, one price being for wholesale customers and Freemen of the Society, and the other for "Strangers and chance customers."

Changes were often made to meet new circumstances and to improve the working of the Stocks, some were fairly major and designed to improve efficiency, but did not make fundamental differences to the original ethos. Between 1702 and 1822, two new sets of Articles were drawn up for the Navy Stock whilst the Laboratory Stock had four.



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The Navy monopoly was strictly maintained and was only once challenged when in 1755 an apothecary of Plymouth, William Cookworthy, obtained a contract to supply drugs and medicines for the hospital ship *Rupert.* After some strong protests by the Society to the Admiralty this was not permitted again. The Laboratory monopoly was less easily maintained as the Society's writ only ran in the City and for seven miles outside it, but was sufficiently strong to allow the Society a firm grip on much of the City's trade.

As time went on other useful contracts were obtained. By the middle of the 19th. century, in addition to the Navy, the Society was providing many of the Army's drugs, those for the Ordnance Board, the East India Company, the Crown Agents, many hospitals and much of the prison service. All of this was in addition to the trade with its own members, its sales to chemists, druggists and apothecaries, and the dispensing business in the shop. They even supplied the First Fleet taking convicts and settlers to Australia. It is no wonder that a profit was made and that membership of the Society was so popular amongst those in the trade. The attraction was so great that there was never any real difficulty in recruiting members and keeping good discipline, as removal meant a financial loss.

The profitability of the two Stocks was always different. The Laboratory sold goods at high discount to members of the Society still in trade, and at a higher but never the less competitive price to the others, and thus made little direct profit, although it was still a good stock to own if you were a buyer of medicines. The Navy on the other hand sold goods to the Government at the best price it could get, and in the troubled times of the late 1700s declared dividends as high as 30% a year, the £100 nominal share being valued at £250. It should be explained that the shares were not permanent but in fact redeemed at the end of each Master's year and new subscriptions taken with new members coming on to the list and others leaving. This system allowed the committees to vary the total capital in use each year, and in the beginning when shares were not redeemable, allowed deaths and changes in investment policy of the individuals to be taken into account.

The Retail Shop



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**Personnel and Management.**

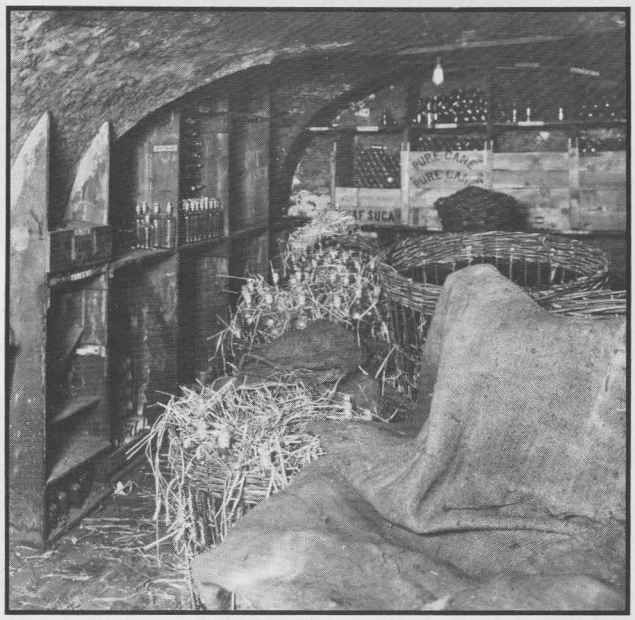
The day to day running of the Stocks was carried out by the operator. He (they were all men) was the key person in the organisation and had to be chosen with care. First, he had to be "willing to put in £200 in his owne estate" by way of security and was to dispense as directed "to the best of his art and skill" in accordance with his Freeman's oath. He had also to give notice in writing to the President and Censors of the College and to the Private Court of the Society, "before he do sett upon the preparacion of any thing of moment that is Chimicall", and the medicines had to be inspected and approved by the Private Court before being put on sale. He had to prepare a catalogue with notes of the authorities for the formulas which he used. The Court had to prepare price ratings for the preparations, and a copy of the rated catalogue was presented to the College of Physicians, and was also distributed by way of advertisement.

Samuel Stringer, a Yeoman of the Society, was the first to be chosen and after some discussion with the committee his terms of service were agreed, including that when his apprentice was out of his time, Stringer would give up his own shop; the agreement was to last three years. Stringer was not happy with his contract, it was revised in 1672 and he was released from it in March 1673, when a Yeoman, Samuel Hull, was appointed. Later a German, Nicholas Staphorst, took over the work. He seems to have been an efficient man as profits steadily increased until he died in about 1700. He was responsible for producing the catalogue of the Laboratory preparations published as *Officina Chymica Londinensis.*

In 1822 it was decided that running the organisation as one company would be simpler and more effective, and so it was agreed that the two Stocks should amalgamate. A new Deed of Co-partnership was drawn up and the new United Stock came into being on 1 January 1823. There were two classes of share, the first class, open only to Liverymen and with a nominal value of £420, and a second class, with a value of £60, open to any Freeman of the Society in practice as an apotheary. Proprietors could hold only one share. Promotion from second to first class was to be by seniority, and admission to the second class was by selection of the committee.

One of the side effects of re-organisation was that Professor William Thomas Brande, FRS, the distinguished Superintending Chemical Operator wrote a booklet about the factory, its history, and more importantly a description of how it worked with a detailed layout. The original even shows where the flues and drains ran and other aspects about which there is today no other information.

A glimpse of the factory's personnel gives an idea of the size and complexity of the organisation. In 1910 the staff consisted of 15 men with salaries ranging from £85 to £300 a year, and 21 being paid between 12s. and 35s. weekly. This gave a total annual bill of £3,735. There was a pill room boy, a bottle washer, a window cleaner and an engine driver. The salaried staff included the accountant who was in charge, dispensers, analysts and a foreman. Their service with the Society varied between one and fifty years. The Stock also supported two pensioners.



Part of the bottle store in the cellars

**The Factory, Shop and Warehouses.**

The laboratory was situated at first under the Great Hall, the principal rooms being on the first floor so that the partly unenclosed ground floor could be used for other purposes. A dangerous decision that could not possibly be made today. In December 1677 the tenants of the houses abutting the Hall complained bitterly about the sulphur fumes from the laboratory and the practice of burning it in the kitchen flue. This habit was changed if only because it greatly inconvenienced the Society members as well as their neighbours.

It is clear that there was not enough room for all the processes in the allotted area under the Hall and the sulphur burning took place thereafter in the Rosemary Room in the attics, whence no doubt the fumes fell upon the tenants without inconveniencing the Society members. There were other misadventures and problems over the years, and in 1683 the Court was so worried about fire risk that they took out insurance for £2,000, paying a premium of £45 16s. Between the east side of the Hall and the new houses was a small yard in which were the stills of the laboratory. In later years the flue between the Great Hall and the Court Room was filled in, the operator being allowed to continue using the two hartshorn furnaces but not the vitriol one until further notice. Sadly, we do not know exactly where these were located except that they are under the Hall. In 1734 there was a fire, and as a consequence a portable fire engine and two dozen buckets were bought.



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The Still Room, November 1911

The Society bought a 61 year lease of the eastern half of the old cloister garth after the Great Fire. Four houses were built on the land in 1671 some of which were let. Stringer was allotted one and a second was used as a retail shop and store for the Laboratory Stock and also by the committee. The shop was moved in 1674 to a site under the colonnade on the west side of the Hall where it remained almost continually until 1922.

When the lease fell in, the Society was unable to renew it so that the Laboratory Stock had to vacate the building they had used as a store in Glasshouse Yard. In 1733 they were given a house on the western side facing what is now Blackfriars Lane, but then Water Lane; it was next to the main entrance to the courtyard. It remained here until 1778 when the Society was able to buy the cloister garth site, half the total cost being met by both Stocks lending £600 at 5%. Part of this site was used to build new premises, part of a much larger scheme which involved the demolition of the buildings to the south and west of the courtyard and the erection of new houses and a large warehouse. This work was completed in 1783 and in the meantime the Stocks had much difficulty in operating.

A lease drawn up in late 1786 gives much information about the use of the property. The Laboratory Stock had a laboratory for salts, a still house, magnesia laboratory, new chemical laboratory, committee room, the large laboratory under the Hall, and the chemical warehouse under the library extending for 505 square feet to the west. There was also the head warehouseman's room with the house and warehouse over it, a new dwelling house to the north, and another for the chemical operator between the shop and the beadle's house.

The Navy Stock had the new buildings to the south of the courtyard entrance. In it were a committee room, a counting house and a wholesale and retail galenical warehouse, with warehouses on three more floors above. There was also a small laboratory under the south end of the Hall and a mortar room south of this. Finally there was the mill house to the north.



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In 1842 there was an accident at the Hall which killed Henry Hennel the chemical and galenical operator. He was preparing mercury fulminate for the use of the East India company in Afghanistan, an odd preparation for a medical establishment. This accident led to the formation of a works fire brigade manned by the staff until the United Stock ceased trading; we still have the chief's helmet. The factory was badly damaged in the explosion, over a thousand panes of glass being broken.

**Machinery and Equipment.**

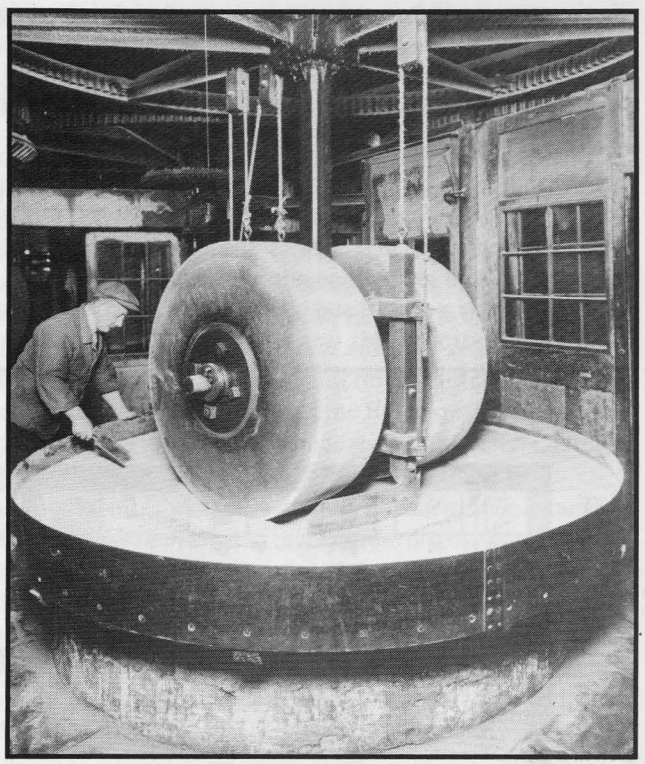
Not much is known about the earliest equipment used except that kilns, stills and fire places for heating were used. By the time that Brande wrote in 1822 there was everything that was needed and most of it in the forefront of technology. He described the factory in a detail which can only be summarised.

There was a chemical laboratory where were the open fires and nineteen furnaces for all processes requiring intense heat. Also hot and cold water on tap and a hose permanently rigged for use in case of fire; the buildings were reputably fireproof but accidents happen. In the still house next door, distillations and evaporations were performed using steam at one and a half atmospheres supplied from an 800 gallon copper boiler in an adjoining building which was fed with water by a forcing pump operated by the steam engine. The still house contained six stills, twelve pans and a drying stove.

There were store rooms for the chemicals and apparatus, a staff room and a test room where products were checked. In the mortar room there were mortars, presses and at the end of this room there was a drying stove used for the desication of articles requiring higher temperatures. Nearby was the Magnesia House for magnesia and saline preparations, and a series of vessels for saturating alkalies with carbonic acid. Then there was the counting house. In a detached building there was a steam engine which supplied the power for grinding, sifting, triturating and pounding in the mill house. In the centre of the main laboratory was a hundred foot chimney. The flues, water and steam pipes were led through the buildings in underfloor conduits with cast iron plates over them.

There was one particularly notable piece of equipment, a gas oil apparatus for the production of gas, and when introduced at the beginning of the 19th. century lit the Hall, as well as providing gas in the laboratory and still house. To supply all the water an artesian well was dug, although we have no idea exactly where it was, and one can only hope that it was properly capped.

In 1854 it was necessary to replace the mill house to the north of the property and its equipment. It then contained an ancient eight horse power table engine which had been in use since the early years of the 19th. century; prior to that a pony had been used. It was reported when the mill house was demolished in 1915 that the milling had once been done at a windmill in Lambeth. There is no evidence that the Society ever owned a mill there, though apothecaries and druggists, including at least one Master of the Society, rented it and used it for grinding drugs.



The new mill house of 1854 had a beam engine installed by Maudslay, Son, & Field at a cost of £950. It was rated at 12 horse power and worked with a steam pressure nominally of 40 lbs but which often fell to five or six lbs without causing problems. It had a single cylinder and a heavy 12 foot flywheel with teeth cast in its periphery, the drive to the various machines being by spur and bevel gearing, belt drive being unknown at the time. The old beam engine after sixty years activity was in perfect condition when broken up; it was the last beam engine at work in the City. Steam had been supplied by a Cornish boiler dating from 1877 in the cellar below the engine-room.

The 1915 demolition was brought about by the need to make Blackfriars Lane wider and the LCC's compulsory purchase order gave the Society no choice. Parts of the land on which the housekeeper's house and mill house stood were taken, and some extra land given in exchange on which a new office building was erected. In 1987 we exchanged the same lands with the City and the lane is now back to roughly its old alignment.

During the demolition the engine and boiler were broken up, as were two of the mills, the remainder being moved to a new mill house to the rear of the Hall where there was, in addition to the mill, a disintegrator for roots (a turbine-like device running at 4,000 r.p.m. driven by a 10 horse power 400 volt motor); a linseed crusher and sifter; an emulsifier; steel stampers and mortars for



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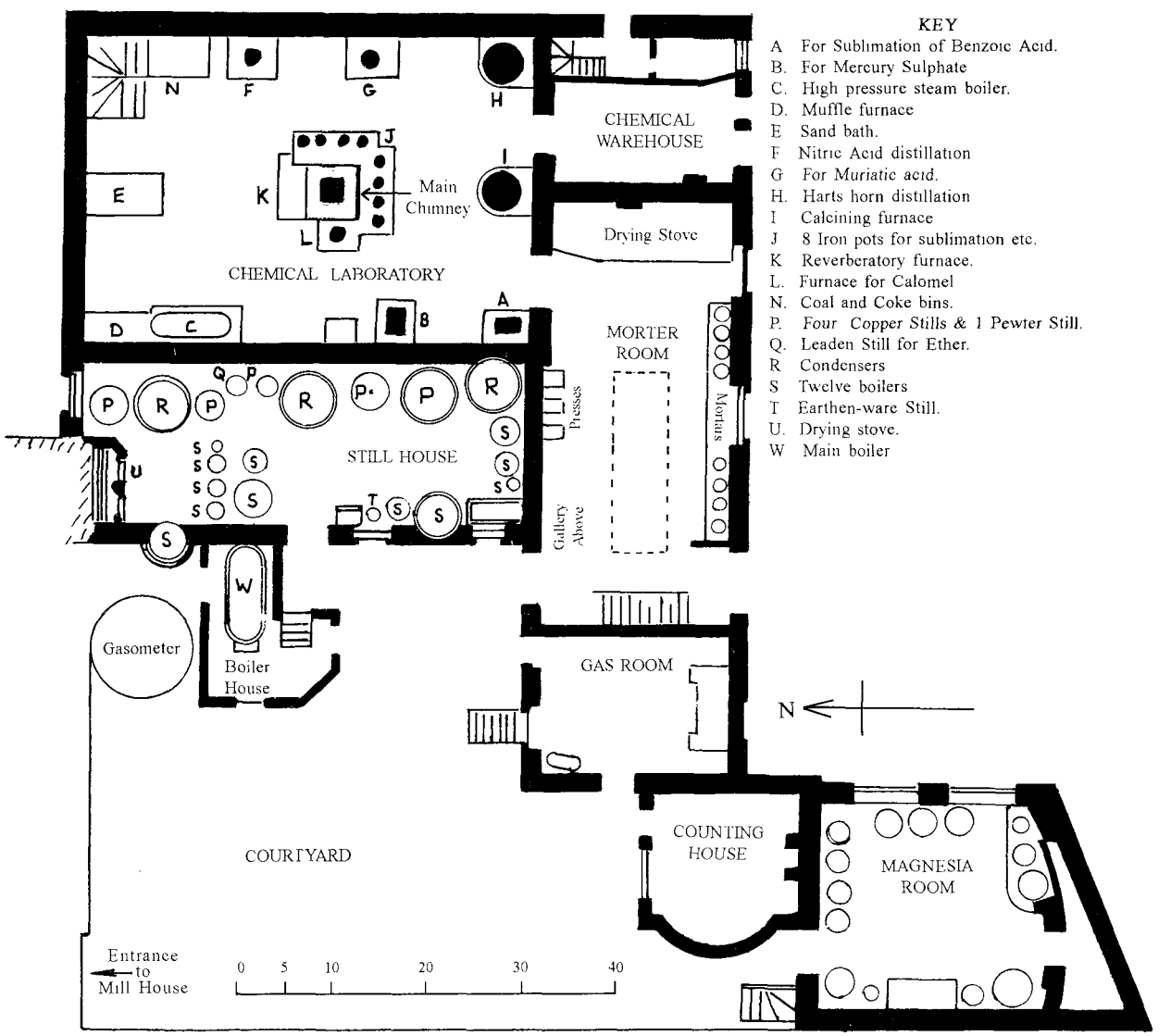
crushing minerals and drugs; a double rocking sieve, and a pill-mixing machine, all electrically driven.

For many years the Society had generated its own supply of electricity, and after a certain amount of trial and error had ended up with a Robey gas engine of 18 horse power and a 54 cell Tudor battery, but now current was supplied from the Charing Cross Company's 400 volt D.C. mains for power, and at 200 volts for lighting.

**The End.**

Throughout the first half of the 19th. century the trade flourished and expanded, but as the century ended the expanded Empire led to demands which the Society could not fulfill; the monopolies and contracts fell away, although trade was still strong. This was not to be sustained and the trade was slowly lost to competition by the pharmaceutical industry. In 1920 a loss of £36 0s.8d. was reported compared with a profit of £1,139 15s.1d. the previous year. A year later this loss rose to £3,695 3s.8d. and the Court agreed to accept the accountants' recommendation that the Trade should be closed.

Most of the process books were sold to Randall & Wilson Ltd. of Southampton, whose premises were bombed in the War and all their records destroyed. The retail business, prescription books etc. were bought by Cooper & Son of Sloane Street. We have two storage barrels and a few jars which were bought by members and later given back to us. There are minute and price books with other papers from the last century at the Guild Hall and the Hall itself.




The Manufactory in W T. Brande's day (1822)

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# IN SERVICE OF ECONOMY AND SCIENCE: Hospital Pharmacy in Heidelberg throughout History

**Dr. A. Helmstädter**

In general, hospital pharmacy under the control of a pharmacist in Germany arose during the second half of the 19th. century at approximately the same time as in Britain.[1] Its tradition differs significantly from the British situation where pharmacy was initially the responsibility of the hospital apothecary.[2] In Germany, hospital pharmacy, defined as an institution for drug supply located in the hospital, mostly serving in-patients, and ruled by a fully trained pharmacist usually developed from other supply patterns, such as from community pharmacies or dispensing nurses.

Until at least World War II most German hospitals did not have their own pharmacy run by a fully trained pharmacist. In hospitals without central drug stocks, the remedies were delivered by a community pharmacy nearby. For out-patient care drug prices were fixed by the government in a list called the *Arzneitaxe*. Usually the particular authority had a contract with one or more pharmacies and received a discount for drugs delivered to hospital patients and to poor people receiving health care free of charge. This is known as the **delivery model**.

In other institutions the pharmacy deputed a pharmacist to look after the drug stocks and to dispense prescriptions in the hospital itself. This was the **branch model**. In 1844 Pastor Theodor Fliedner, head of a nurses' community in Kaiserswerth near Düsseldorf started to employ specially trained nurses as pharmaceutical staff. The authorities permitted this kind of dispensary if the deaconess had been taught by a pharmacist to a sufficiently high level of pharmaceutical skill. In 1853 Prussia enacted examination regulations for dispensing nurses, and this system, the **dispensary model**, became very common.

These models were all commoner than hospital pharmacies run by an academically educated pharmacist employed by the hospital administration; two-thirds of the hospitals in the 1920s did not employ a pharmacist.[3] In Germany drug distribution by nurses lasted until 1976 when a new law was enacted which obliged every hospital either to employ one pharmacist or to sign a contract with a nearby community pharmacy. Many hospitals, including a big university institution decided not to employ pharmaceutical staff, mostly for economic considerations.

Nevertheless the driving force for establishing a pharmacy in a hospital was a necessity to improve the economics of drug supply, and so minimise therapy costs.[4] Other reasons included the opportunity for closer relationships between prescribing physicians and pharmacists, the expectation of better quality drugs and a more flexible access to medicines.

The historical situations in Heidelberg serves as an example of the early development of hospital pharmacy in Germany, as well as the scientific ambitions of German hospital pharmacists at the end of the 19th. and the first decade of the 20th. centuries.

## The Founding Period.

The academic hospital in the city of Heidelberg containing twenty beds was opened in 1815. It changed its location several times until the buildings, (still partly used today), for 360 patients near the River Neckar were built in the years 1869-1876.[5] As early as 1860 the hospital's administration, driven by financial problems, discussed the founding of a dispensary or hospital pharmacy. From 1856-1859 drug costs had risen continuously and were said to be a result of the different prescribing customs of rapidly changing physicians. At that time the hospital's needs were provided by private pharmacies in the city changed monthly, (delivery model).

First of all, the administration (*Academische Krankenhauscommission*) tried to increase the discount on officially listed prices conceded by the pharmacy from 10 to 20%.[6] The negotiations partly failed and the discount was only increased to 15%. This was the main reason for establishing a hospital pharmacy in the new building which was opened in 1876. However the rooms for the pharmacy had been designed only for the needs of a dispensary and were therefore too small for many years.[7]

## Duties of the Employees.

In the archives, instructions for the pharmacy's employees finally agreed on 14 May 1877, have been found. The first part deals with the chief pharmacist, the second with his assistant, and the third concerns the "Stößer", a non-pharmaceutical helper. The pharmacy's head was obliged to follow all the legal requirements concerning pharmacies as well as the instructions of the hospital's administration. Very detailed descriptions of the book-keeping requirements were included; the chief pharmacist was responsible for eight different daily records concerning purchase, stocks and inventory, receipt and expenditure, and prescriptions, in chronological order as well as in alphabetical order of the patients' names. Lastly, a book on laboratory preparations had to be kept.

Every three months, the income and all the receipts had to be sent to the hospital administration. Each month details of acquisitions had to be reported, and each January a detailed report on the pharmacy's situation during the previous year had to be written. The chief pharmacist was also made responsible by § 6 for maintenance of the telegraph batteries. Permission for absence from the pharmacy of more than three days was needed from the administration. The only concession was that of buying food and beverages from the hospital's stores.

It is noteworthy that the instructions are full of



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administrative duties but do not say much about pharmaceutical services; typical of hospital pharmacists' instructions at that time.[8]

The chief pharmacist's deputy or assistant was made responsible for keeping the laboratory journal. Pharmaceutical tasks and absences had to be co-ordinated between both pharmacists, and during the chief's absence the assistant was on duty for 24 hours a day.

A suitable craftsman for the pharmacy, the "Stößer", was employed by the chief pharmacist under conditions stipulated by the administration. He was responsible for any auxiliary work and the assitant's needs, if there was not too much work in the pharmacy. Usually he was on duty every day except Sunday afternoon. Fabian Witkopf served the pharmacy as "Stößer" for the last two decades of the 19th. century.

There are details of the daily work in the records; in 1878 about 25,000 prescriptions were dispensed, in 1900, 75,000 and in 1928, 120,000.[9] During the first decades of the pharmacy's existence the number of clinics. institutions and laboratories supplied grew step by step, even those for out-patients grew rapidly. Additionally, the pharmacy supplied drugs and preparations to hospital employees without any profit. In a letter to the administration of 23 June 1908, chief pharmacist Weiss complained of the number of prescriptions rising to about 300 a day. Furthermore, in 1902 the pharmacy started to produce mineral waters and lemonade.

### Economic Aspects in and outside the Hospital

In everyday work economic aspects also played an important role for the pharmaceutical services. In 1893 the administration made regulations for drug supply in the hospital which were dominated by economic aspects. The six clause document obliged the clinical institutions to buy all their drugs and chemicals in the hospital pharmacy which had to supply all the prescriptions and orders.

Two kinds of prescription were defined. One, was all those for individual patients, mainly powders, ointments, pills and suppositories which had to be sold at 50% discount of the prices legally fixed for single-patient supply, and the other, bulk or raw materials, beverages, disinfectants and chemicals which had to be sold with an add-on-charge of 30%. Therefore the physicians had to use two prescription books in which the prices had to be noted by the pharmacist. If there was a problem in definition the final decision lay with the administration.

For decades there was continuous struggle between the hospital pharmacy and the local community pharmacists concerning drug supply to out-patients treated in the hospitals, the out-patient pharmacy services being supported by the administration for economic reasons. The pharmacy however was not too convinced of the benefit. When in 1908 the amount of work exceeded the pharmacy's capacity, the pharmacist, Weiss, did not ask for more staff but proposed discontinuing the pharmaceutical services for the poor and those treated as out-patients. As he wrote, this would satisfy the community pharmacists, and would also comply with legal requirements. Indeed, there is much archival material illustrating the envy and grudge among the community pharmacists when they were unable to sell their products to hospital outpatients.

In the late 19th. and early 20th. centuries, increasing numbers of industrial products appeared which were more expensive than the traditionally prepared ones.[10] It became an important task for the pharmacist to persuade physicians to continue prescribing preparations from traditional formularies. Apparently this was done successfully in Heidelberg. In 1928 Weiss stated that this was achieved "in close co-operation" with the physicians as they had already been admonished in 1877 by the Secretary of State of Health. However, the problem became ever more important for pharmaco-economics in the following decades. When in 1926 the drug budget had risen steeply compared with 1925 it was mainly due to the increasing number of branded products.

In 1933 the pharmacists had to explain how drug costs could be contained. The incoming chief at that time, Alfred Dorner, accepted a reduction in staff from three to two pharmacists but also said the physicians must prescribe more economically. First of all, he asked for a ban on branded products whenever possible, and also complained of sudden changes in prescribing customs which left him with large stocks of unwanted drugs. He gave advice on substitution with a view to economy. Prescription books were to be regularly examined by the medical department's head, and the wards were to return immediately remedies no longer in use.[11] A central stock of commercial products of the period was established in the pharmacy. The clinicians were not very enthusiastic about saving drug costs as was noted by the Secretary of State for Health in October 1936, six months after yet another unsuccessful attempt by the hospital administration to reduce drug costs by means of prescribing regulations.

The relationship between pharmacists and physicians, nevertheless, seems to have been quite good. An example is documented by a letter in which three retired, famous medical professors (L.Krehl, P.Ernst and C.Menge) asked for permission to continue buying drugs for their personal needs in the hospital pharmacy, as they had done for many years and had always received interesting pharmaceutical advice when required.

Although pressurised by administrative duties, hospital pharmacists in Heidelberg before World War II had always been interested in the pharmaceutical sciences and made important contributions.

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**The first Pharmacists.**

During its first sixty years, Heidelberg's academic hospital saw just three pharmacists-in-chief. Services were built up by Dr. Gustav Vulpius (born 9 June 1839 at Boxberg, died 5 August 1917, Heidelberg.)[12] In 1857 he was appointed pharmacy assistant after an apprenticeship in Langensteinbach near Karlsruhe about which he has written some fascinating reminiscences, soon after he started in his father's pharmacy in Boxberg but came to Heidelberg for university studies each summer.[13] From 1866 to 1872 he was owner of this small pharmacy, continuing the long family tradition, and began publishing scientific papers dealing with mercury salts and the isolation of condurangin from *Marsdenia condurango.*[14] His Ph.D. thesis was on *Salvia glutinosa* (Jena 1875)

Having sold the pharmacy, he moved from Boxberg to Heidelberg for private reasons and worked as a journalist, mainly for *Archiv der Pharmazie* and *Pharmazeutische Zeitung,* besides working in an organo-chemical laboratory. When the academic hospital's pharmacy was founded in 1876, Vulpius was appointed chief pharmacist; in contrast to other locations his salary is unknown. He held the position for 25 years until he retired in 1901 for health reasons.

Despite daily work and all the administrative duties, he continued publishing reports and scientific results in all the esteemed journals of the time. Vulpius' scientific interest was mainly focussed on analytical problems, among many others he published papers on the quality control of ether, tinctures, carbolic acid, cocaine and lactose, and proposed procedures for the determination of mercury and iodine in urine, as well as writing on some current political contributions. He was a member of the German pharmacopoeia commission which adopted some of his analytical methods, and he contributed to important text books.

Vulpius' successor, Dr.Franz Weiss (born 7 February 1868, St.Blasien, died after 1944.) was interested in physiological chemistry and published with Nobel Prize winner Albrecht Kossel (1853-1927) work on protein chemistry. Weiss had passed his exam. in 1892 in Freiburg/ Brsg. and was appointed Ph.D. by Professor Baumann in Freiburg two years later. He worked for another two years as a physiological chemist in Breslau, and after some time in a community pharmacy entered hospital pharmacy in Emmendingen near Freiburg before he came to Heidelberg in 1901. He served the academic hospital for more than thirty years until he retired in 1933.[15]

At that time, pharmacist and food chemist Alfred Dorner (born 1 June 1882, Haßmersheim, died 15 July 1942, Schwenningen)[16] had already been working in Heidelberg since 1919 and had obtained his Ph.D. there in 1921. In 1923 Dorner went with a physician to Canton in China where he built up the "German Pharmacy". He came back to Heidelberg for one and a half years before leaving again for an eighteen month journey around the world.[17] He and his wife who worked for E.Merck, were driven by scientific interest. Dorner was head of department from 1933 until he died. He became a lecturer in pharmaceutical law in 1936 at Heidelberg University.[18]

**Discussion**

According to Rudolf Schmitz the most important step in the development of hospital pharmacy in Germany was the growing interest in the economic aspects of drug supply to hospitalised patients.[19] This occurred in the first half of the 19th. century when hospitals changed from charitable institutions to centres of medical treatment. The effect of this driving force can be seen in Heidelberg's academic hospital where the economics of having its own pharmacy were discussed for fifteen years,[20] and remained predominant in the staff's daily work.

It is noteworthy that these cost saving and restrictive methods are not very different from those applied today. Regulation for prescribing, generic substitution and limited stocks of branded drugs are now well known. Both in history and today good comunication between pharmacist and physician is more successful than rigid adherence to the rule book.

**List of Chief Pharmacists at Heidelberg's University Hospital.**

| | |
|---|---|
| Dr Gustav Vulpius | 1876-1901 |
| Dr Franz Weiss | 1901-1933 |
| Dr Alfred Dorner | 1933-1942 |
| ??? | 1942-1948 |
| Dr Werner Heid | 1948-1959 |
| Dr Hubert Conrad | 1959-1973 |
| Dr Richard Wolf | 1973-1983 |
| Gunter Schock | 1983-1993 |
| Dr Thorsten Hopp-Tichy | 1993- |

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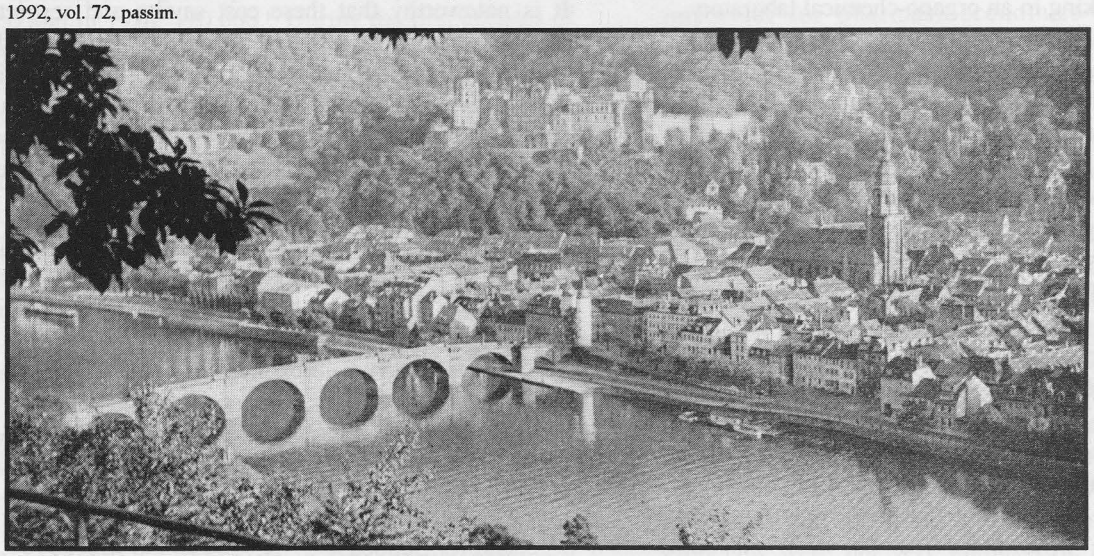
20. The economic aspects remained predominant in the staff's daily work. This is obvious in spite of relying on archival material mainly consisting of the authorities' documents, so that one may easily over-estimate their importance.

NOTE: The pharmacy of the academic hospital in Heidelberg must not be called a "university hospital". These institutions, extensively studied by Ganzinger and Friedrich are to be found as early as the 16th. century and served as teaching institutions for medical students who had to study materia medica in a pharmacy. They were owned by a private person teaching in the university's medical faculty and usually belonged neither to the university nor supplied hospital in-patients.. They were in fact retail pharmacies. Such an institution had also been established in Heidelberg in the 18th century. In contrast to some others which lost their character as places of medical education and started supplying the growing academic hospitals, this was not the case in Heidelberg. There, drug supply and dispensing was changed around monthly between the local pharmacies before the hospital pharmacy was founded in 1876.



Heidelberg

## DIARY DATES

B.P.C. Conference, Scarborough. History Session.
Wednesday 17 September 1997 at 2.15 in the Spa Complex

"T.N.R.Morson: A pharmaceutical pioneer" by A.F.P.Morson

"Who was Lilly the Pink?: The story of an American proprietary medicine." by W.A.Jackson.

## MEMBERS ACTIVITIES

Over three hundred anaesthetists met at the Queen Elizabeth II Conference Centre, Westminster, on 16 January 1997 to celebrate the 150th. anniversary of the introduction into medical practice of ether (1846) and chloroform (1847). Eleven papers were presented surveying the social, medical and scientific background to the discovery of anaesthesia. Dr. M.P.Earles presented the paper entitled "Empiricism and experiment: pharmacology" in which he discussed an early theory of the mode of action of narcotic vapours.

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# PHARMACEUTICAL HISTORIAN

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Contributions to the Editor: Dr. J. Burnby B.Pharm., PhD., FRPharmS., FSA. 36 York Place, Edinburgh. EH1 3HU

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## SOCIETY MEMBERS' ACTIVITIES.

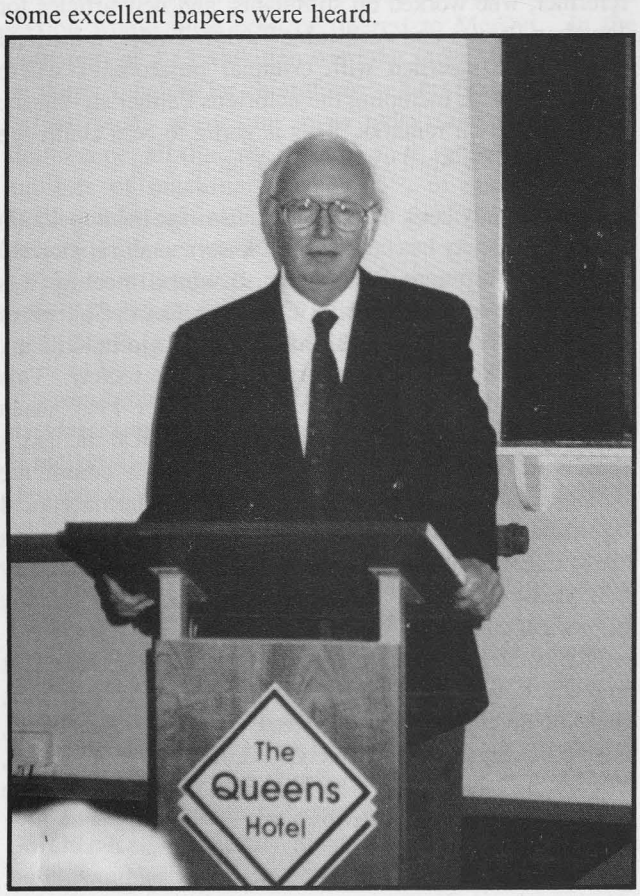
Dr Christine Hillam, BSHP member and a leading light of the Lindsay Society for the History of Dentistry, was asked to give the 2nd. Lilian Lindsay Memorial Lecture on 18 May 1996 at the British Dental Association Conference in Edinburgh. Her paper, "James Robinson (1813-1862): professional irritant and Britain's first Anaesthetist" has now been published. One of the hardest workers I know, other papers of Christine's have been recently published in the *Dental Historian*, The Lindsay Society's journal, many of which would be of considereable interest to BSHP members, such as "Quackery is in the Eye of the Beholder: Motes and Motives" (No.20,Nov.1995) and "The availability of Dental Products in Britain at the end of the 18th. century" (No.32,May 1997).

In this last number is a paper by Dr Burnby, "Preparers and Distributors of English Proprietary Medicines".

Any members of BSHP who have an interest in dental history are welcome to join the Lindsay Society on payment of £12 a year, or *Dental Historians* may be obtained for £2.50 each from Dr C.Hillam, Dept. of Clinical Dental Sciences Research Wing, Liverpool University, Liverpool. L69 3BX.

The British Archives Council on Friday, 23 May 1997 held a symposium on the "Historical Records of the Pharmaceutical Industry" at the Marylebone Road site of the University of Westminster. The first paper was given by Dr J. Burnby entitled,"The Early Days of the Pharmaceutical Industry"and was followed by "The Changing Structure of Britain's Pharmaceutical Industry, 1870-1970" read by Mr T.A.B.Corley of the University of Reading. A new member to BSHP, Dr Julie Stevenson, spoke with Lesley Richmond and Alison Turton on the BAC survey of the industry and the creation of an electronic research facility.

A very enjoyable Annual Conference was held in April at Bournemouth. The weather was exceptionally kind and some excellent papers were heard.




Professor W.Brock talking of the importance of Justus von Liebig for the history of chemistry

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A number of BSHP members are involved in either writing new entries or else revising old ones for the New Dictionary of National Biography (New DNB for short).

Christine Hillam has tackled Charles Allen, (fl.1685-87), James Robinson (?1813-1862), Bartholomew Ruspini (1730-1813), Lilian Lindsey (1871-1960), all of them dentists.

Nita Burnby, as might be expected, is writing about some of the apothecaries. John Conyers (1633-1694), Francis Bernard (1627-1698), Thomas Corbyn (1711-1791), John Sherwen (1749-1826), have yielded to treatment. John Parkinson (1567-1650), Samuel Dale (1659-1739) and Thomas Wheeler (1754-1847) are to follow.

Melvin Earles has been and still is busy. A new article was required for E.F.Bashford (died 1923) who established the methodolgy for cancer research, whilst revisions have been submitted for Sir Thomas Lauder Brunton, physician and pharmacologist,(now emphasising his contribution to modern pharmacology) and Dr Robert Pitt MD,FRS.(died 1713). Pitt was involved in the controversy over the dispensaries established by the College of Physicians, but his contributions to the Royal Society are now being particularly noted. in the pipe-line are a revision of F.E.Anstie, physician, editor of the *Practitioner* and social reformer, who worked on stimulants, and new articles for Jonathan Pereira and A. Swaine Taylor. Taylor, a medical jurist, was concerned with criminal proceedings where poisons figured, including the notorious Palmer strychnine trial. As Melvin remarks,"This is going to be a challenge but I have until April 1998 to work on it."

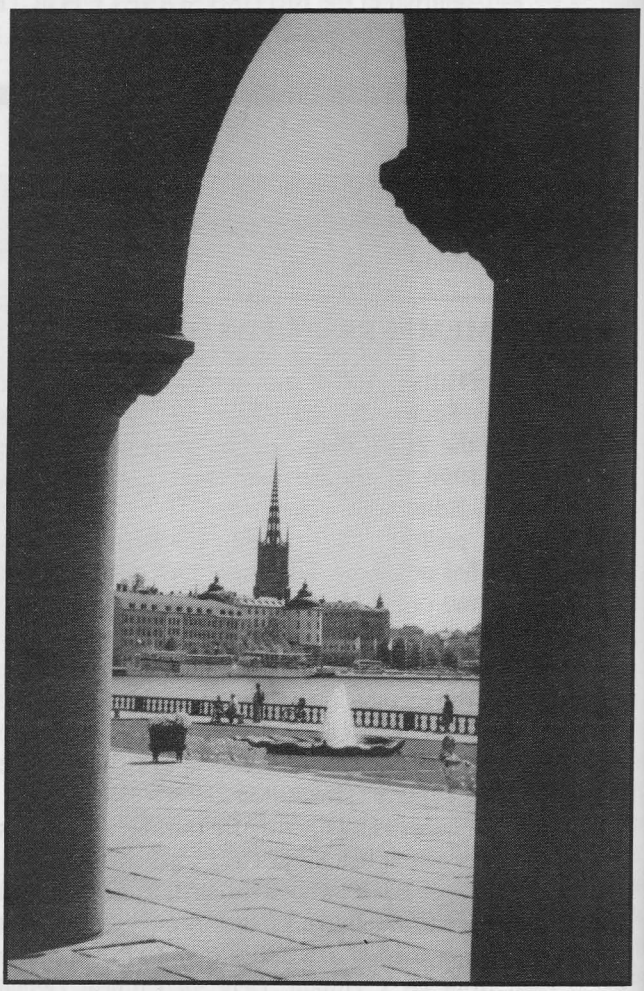
It has already been noted in the *Historian* (March 1997) that a new society has been formed known as the **Historical Medical Equipment Society**. Its inaugural meeting was held on Saturday, 12 April 1997 at the Royal College of Surgeons in London when the chairman, Mr John Kirkcup, gave the background to the formation of the society. This was followed by the election of officers for 1997 when Caroline Reed, curator of the Pharmaceutical Society's museum and BSHP member, was elected a committee member. She read a short paper entitled, "Pharmaceutical equipment", whilst other members gave them on "Instruments and surgical history" (John Kirkcup), "Early anaesthetic equipment" (Tony Bennett), and "A Miscellany of medical equipment" (David Warren).

Membership at £10 a year is open to all with an interest in medical, surgical, pharmaceutical or dental instruments; they should contact Caroline Reed, (temporary Secretary), Royal Pharmaceutical Society, 1 Lambeth High Street, London SE1 7JN. (0171 735 9141 Ext 354). There will be initially two or three bulletins a year.

## FOUNDATION OF THE AUSTRALIAN ACADEMY.

Mr Geoff. Miller of Western Australia wrote towards the end of 1996 to inform us that an Australian Academy of the History of Pharmacy had been founded. Dr Howden was asked to write to Mr Miller to give our congratulations and to offer the Academy any assistance from BSHP that we were able to give.

It was hoped that Mr Miller would be able to come to the meeting at Stockholm of the International Society and the International Academy for the History of Pharmacy which was attended by Dr J. Burnby and Miss A. Hutton in June 1997; unfortunately Mr Miller was unable to do so



View of Stockholm seen through the archs of the City Hall where the banquet was held

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# THE GREAT EXHIBITION OF 1851.

**A.F.P.Morson.**

The Great Exhibition was so large, so successful and influential throughout the world, that there is some difficulty in deciding what to describe even in the class of chemical and pharmaceutical products alone. There were 270 exhibitors in this class, ninety Prize Medals were awarded and four Council Medals, the highest award of all. The two categories were not awarded on competitive grounds but whenever the jury found a standard of excellence. The members of the juries were international and experts in their field.

The scale of the event was enormous. The first large prefabricated iron and glass building was erected to house the exhibits and became known as the Crystal Palace. The Glass Tax had just been lifted, and Mr Punch predicted that children would be reared like cucumbers. Put up in a few months, it was 600 yards long and 135 yards wide. The height was 66 feet with the transepts even higher at 108 feet which made possible the inclusion of the huge elm trees growing in Hyde Park. By the closing date six million visitors made their choice from fifteen thousand exhibitors.

The authorities in London had been nervous before the opening as the event was taking place only three years after the Chartist demonstrations, and a look across the Channel saw revolution on the Continent. Whilst Prince Albert's objective was realised in having an exhibition worthy of the greatness of his adopted country and "comprehensive of the whole world", it was also the year of Louis Napoleon's *coup d'etat*, a horrible episode of bloodshed and ruin.

Opponents of the Exhibition predicted various disasters, especially among the masses who were to pay a shilling entrance fee, or 2s.6d. on Fridays and Saturdays; some even predicted "danger to the safety of the state". In fact, there was no disorder and very little crime.[1]

British exhibits took up half the area with a self-confidence which showed itself at times with a degree of brashness, even vulgarity, not altogether surprising when seen in the light of the economic success of the greatest empire the world has seen with an impressive power in all quarters of the globe. The country showed itself capable of organising and exhibiting on a scale never before attempted. "The century was half gone and contemporaries could look back across the 'Hungry Forties' to the antediluvian world before the railway and the penny post."[2] It was the five thousand miles of railway that brought the public to London.

The Exhibition was opened on 1 May and 700,000 people lined the route to see the procession of notables. Its purpose was "to present a true test and living picture of the point at which the whole of mankind had reached. It was carried out by private means, was self-supporting and independent of taxes.", as Henry Cole pointed out in his preface to the catalogue. All the exhibitors were confident of displaying the nation's undisputeed lead in manufacturing, in commerce and finance. One detail exemplified this. Wedgwood developed good designs owing nothing to European or Oriental ideas for the mass production of household china, an industrial revolution of its own.

After organising his own display, reached by climbing the stairs in the south transept, T.N.R.Morson was an early visitor. It is possible that he took his wife and two younger daughters, and perhaps also, his younger son; certainly, he bought a catalogue, price one shilling, to tour the Exhibition. He would have visited the stand of his friend Antoine Claudet who had supplied glass for the Pharmaceutical Society's premises in Bloomsbury Square. Claudet's real interest became photography and he must have shown the Morson family his daguerrotypes of the Opening Ceremony. (He was the sole licensee.) Perhaps they discussed when he should bring them to an evening meeting of the Pharmaceutical Society, for he was a frequent guest and there discussed his interest in photographic chemicals.

As an early user of the microscope, the instruments section would have been of interest to Morson. In the same part of the Exhibition were the surgical instruments, dentures, inhalers for chloroform and for hydrocyanic acid (which seems surprising to us today) and an improved stethoscope; all this was in addition to the huge industrial exhibits of machinery. With 25% of working males employed in agriculture, there was great interest in new devices and machines for farming.

Our Continental neighbours increased the variety of exhibits by showing cloth for domestic decoration, as well as for clothing, furniture and *objets d'art*.

It was Lyon Playfair who had been brought in to organise the classification of exhibits. He rejected elaborate schemes based on Continental abstractions and divided the items into four groups: Raw Materials, Machinery, Manufactures, and Fine Arts. The juries were careful to accept only those items genuinely made by the exhibitor or his principal; they rejected many items where evidence was lacking.

When the Great Exhibition was first proposed, chemicals were excluded but then the organisers were persuaded that chemicals were a part of commercial industry. It must not be overlooked that Playfair was a chemist, having studied at Giessen, and was a friend of some well-known heavy and fine chemical manufacturers, Morson among them. So chemicals, especially alkaloids, were accepted along with examples illustrating the state of the vegetable drug market.

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Dr. Lyon Playfair, FRS, special commissioner

The idea was mooted that the Pharmaceutical Society should organise a collective exhibit but the proposal was short-lived. After all, this was a time of individual endeavour. By September 1850, the *Pharmaceutical Journal* was reminding its readers that they should apply for the space they needed. Forms were available for submission to local committees by the end of October, and the exhibits were to be available from New Year's Day to 1 March 1851. The categories open to chemists were widedly drawn: raw materials; animal, vegetable and mineral products; chemical substances used in medicine including pharmaceutical preparations.

Some retailers threatened to withdraw if any manufacturers "entered into competition with them". These sort of difficulties were overcome by the specific regulations which were issued defining the principles upon which the committees would act; they were to attempt to reward real merit, to prevent quackery and to avoid trade advertisement.

The *Pharmaceutical Journal* encouraged members by stressing that they should take part "in an honourable trial of skill with foreigners who are already in the field".[3] This cajoling included a reference to M. Charles Dupin who had circulated a pamphlet to encourage Parisian chemists to participate. Discussion on the Drug Exchange led to the formation of a small committee to organise specimens for a collective exhibit but it was "far less complete than originally contemplated". In spite of their precautions the orgainsers let through a few 'quack' medicines. One was "crystallised pyresticks or artificial vital electric salts" which were displayed next to some microscopic crystals stated to have been obtained from human flesh. It was probably ammonium phosphate according to the *Journal*. By the opening date, the exhibits in glass cases and on stands provided by the exhibitors were impressive and "calculated to attract attention from non-professional as well as professional visitors".[4]

Exhibits of iodine obtained from seaweed attracted attention because of the great increase in production starting in 1840, the price falling from 7½d. to 6d. an ounce in 1851. One firm in Scotland which claimed they made one third of all British manufacture produced 7¾ tons a year between 1845 and 1850. Iodine in various grades of purity, as well as its salts, was displayed by four British and two French firms, one of which was that of Courtois who was credited with the discovery of the element. The other was Cournerie, on the west coast of the Cotentin peninsula, which obtained iodine by a single sublimation and was awarded a Prize Medal.

Raw materials ranged from rhubarb and scammony to cloves and nutmegs. Gums, resins, seeds and oils, as well as opium, were displayed; the only European exhibit of the last had been grown in Clermont Ferrand. Surprisingly, there were none from Turkey and only one from Egypt. Howard's collection of cinchona barks was the most striking feature in this section and was later presented to the Pharmaceutical Society's museum. A number of exhibitors presented their specimens to the museum which was in competition with the Chemical Society and Kew Gardens for items illustrating the growing of crops for food, medicine and clothing, as well as those illustrating chemistry.

In the chemical section, single crystals and bowls of tartaric and citric acids, the prussiates and chromates of potash along with alum were displayed, France, Germany, Austria and Italy sending specimens. Powers & Weightman were the only American firm to gain a Prize Medal which was for their collection of picrotoxin, piperin, cubabin, menisperm, santonin and several salts of quinine, all of which they presented to the Pharmaceutical Society. Wetherall & Brother from Philadelphia earned an Honourable Mention.

Alkaloids attracted the attention of eighteen firms, half of them foreign. Quinine sulphate and citrate earned M.Dufour of Genoa a Prize Medal, and a similar recognition was given to those one-time assistants of Thomas Morson, Hopkin and Williams, for their aconitine, valerianates, iodoform and bromoform. Charles Zimmer was awarded a Prize Medal for quinidine which he discovered. he was described in the Report as the largest manufacturer of quinine alkaloids in the world, an indication of the dominance that German firms were achieving which would have such important results for European and American firms for the rest of the century. Their rival Jobst also gained a Prize Medal though it was not long before their firm was incorporated into Zimmer.

The Huskissons, a famous London chemical firm, displayed salts used in pharmacy including their potassium iodide. Bell exhibited, among other things, both extract and tincture of Indian Hemp. He was one of those who



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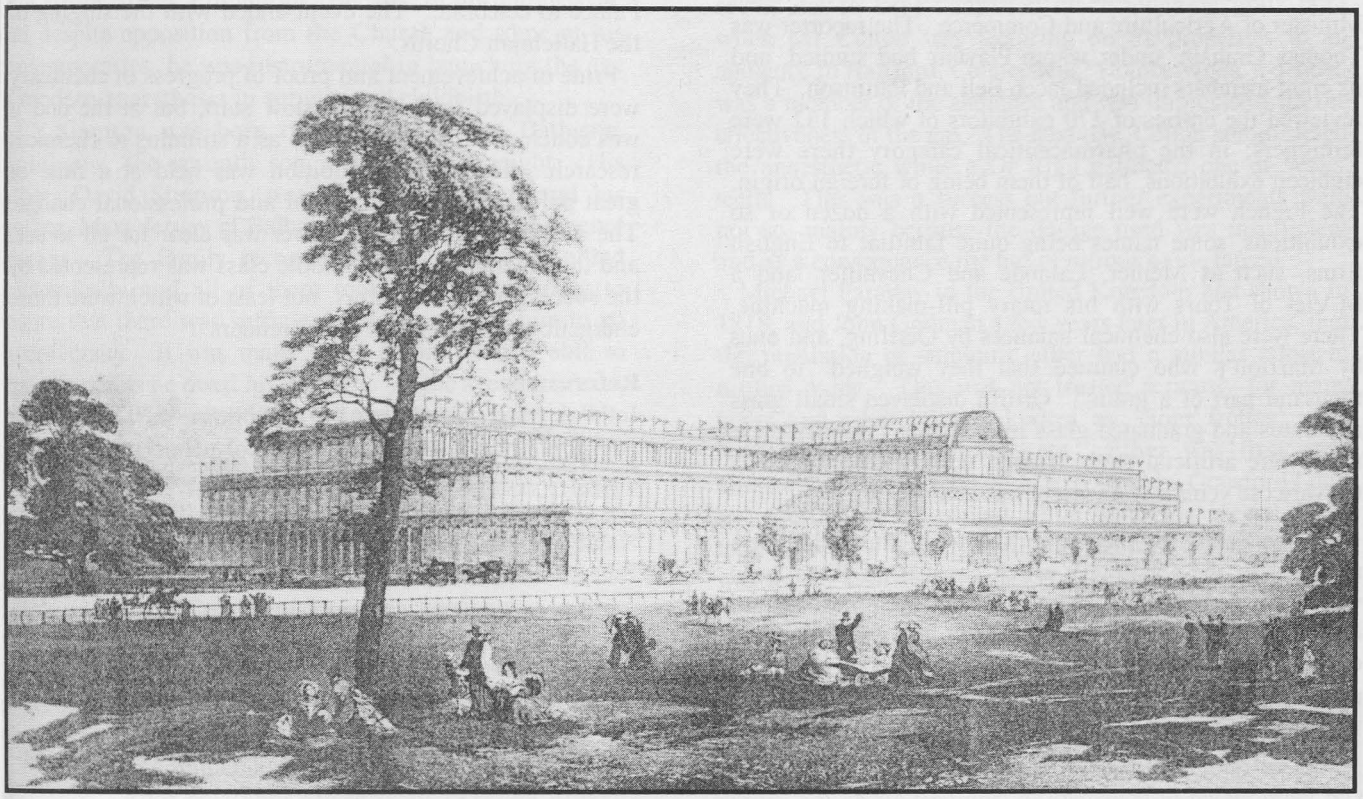
reviewed the Exhibition as a series of lectures at the Royal Society of Arts. His was not a popular lecture as he included political remarks, he did however, draw attention to the anomaly of spirit duty being so much higher in England than Scotland. He believed that this had driven English firms out of the manufacture of chloroform, although in fact several English ones were making substantial quantities at the time; only Duncan,Flockhart's of Edinburgh and Peter Squire exhibited the anaesthetic, the latter also showing his inhaler.

were given to Bullock (for creatinine and caffeine),and to Corridi of Tuscany as well as to Godfrey & Cooke of London. Dinneford showed his magnesia, and J.Bass of Hatton Garden his range of infusions and decoctions, whilst J.T.Davenport exhibited "chemical preparations", no mention being made of his great money-spinner, Collis Browne's Chlorodyne.

Then there was Morson's exhibit which the jury reported as being a beautiful collection and to which a Prize Medal was accorded.



The Crystal Palace in Hyde Park

A Mr Kent of Stanton near Bury St. Edmunds displayed dried pharmaceutical plants which retained the brilliant hues of their flowers as if they were fresh. The discoverer of salicin, M.Leroux, received a Prize Medal, as did Macfarlans. The Report recorded that they had shown a series illustrative of the manufacture of the salts of morphine, specimens of gallic and tannic acids, sulphate of beberin and the alkaloid. The jury stated that they all drew attention to the large scale of Macfarlan's manufacture. May & Baker obtained a Prize Medal for their acids and salts used in pharmacy, but not Savory & Moore who showed Kousso which they obtained from Aden. Two French firms, Alfred Michel and Ménier, also had Prize Medals; Méniers was well known for its exports to this country.

T.& H.Smith received a Medal for their aloin and cantharidin, and Peter Squire for his extracts. Other awards

It consisted chiefly of the rarer organic compounds including the salts of morphine, strychnine and cinchonidine, and pure aconitine, creosote, the furfural of Fownes and chloride of nickel.

An honorary member of the Pharmaceutical Society, the Dane Dr Nathaniel Wallich, curator of the Calcutta Botanical Gardens for thirty years, is remembered for all the plants he discovered, not least for our attractive little geranium, Wallichiana. His Prize Medal was awarded for Indian woods which furnished dyes, resins, oils and medicinal substances. Another honorary member whos exhibit attracted attention was that of Forbes Royle, a doctor who had spent many years in India and who can take credit for suggesting that the Nilgiri Hills were the best place for establishing cinchona plantations. Included in his exhibit were the teas he had arranged to be grown in the East India Company's nurseries in the Himalayas.



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Pekoe, Assam and Souchong are familiar names to us but that of Gunpowder tea is less well known. The display from India was enormous with well over a hundred items. Asafoedtida and acontintum, opium and senna were all to be seen, as was one described as a "native blister fly: Meloe trianthemae."

The highest award, the Council Medal, was given to Pattinson of Gateshead at the Felling Chemical Works for what was described as large masses of crystallised alum.

The Chemical Jury had as its chairman a former French Minister of Agriculture and Commerce. The reporter was Thomas Graham, under whom Playfair had studied, and its eight members included Jacob Bell and Pattinson. They reviewed the entries of 270 exhibitors of which 132 were foreigners; in the pharmaceutical category there were eighteen exhibitions, half of them being of foreign origin. The French were well represented with a dozen or so exhibitions, some names being quite familiar to English firms, such as Ménier, Lalande and Chevallier, and a M.Viel of Tours with his rotary pill-making machine. There were also chemical balances by Oertling, and ones by Marriott's who claimed that they weighed "to one thousand part of a grain." Griffin displayed small glass apparatus and graduated glass instruments. Besides these there were artificial teeth, trusses, corsets, and stockings for varicose veins. The variety was endless.

All the details of the Exhibition with illustrations are recorded in the Catalogue which consists of three large volumes.[5] In addition, there are three volumes of Jury Reports and Comments which contain many useful pieces of information about the industries of 1851.

The cultural and financial success of the event which produced a surplus of £186,000 is enjoyed by all of us. The money was used to purchase the fields on which now stand the Victoria and Albert, the Natural History and the Science Museums. Cole and Playfair, with Prince Albert's backing, wanted a Palace of Arts and Science as the focus point of a great cultural centre with the aim of teaching the mind as well as gratifying the senses.

The Exhibition closed on 11 October and on the 15th. the officials and exhibitors were invited to the Crystal Palace to celebrate. The event ended with the singing of the Hallelujah Chorus.

Pride of achievement and proof of progress in chemistry were displayed in spite of a slow start, but at the end it was concluded that it had acted as a stimulus to chemical research. The Great Exhibition was held at a time of great political, economic, social and professional change. The decline of aristocratic power was clear for all to see, and the emergence of the middle class was represented by the success of the exhibitors, not least of which were those energetic pharmaceutical entrepreneurs.

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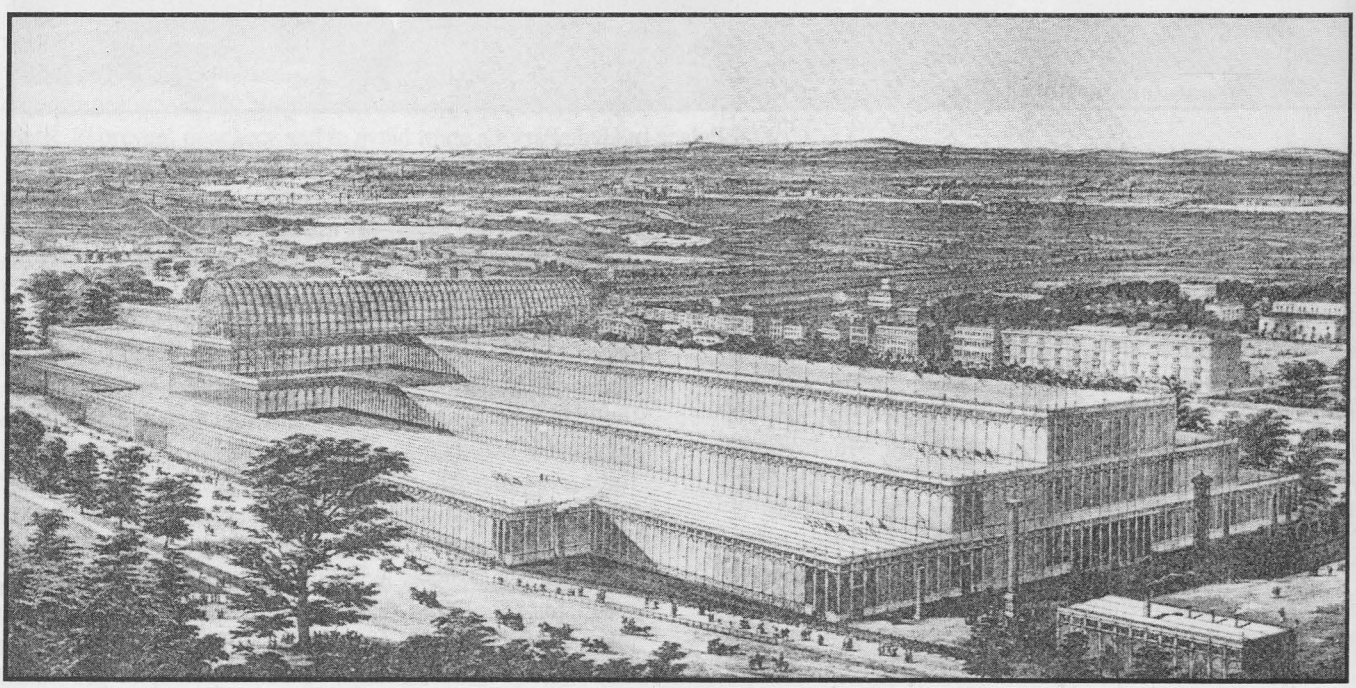

Aerial view of Crystal Palace in Hyde Park



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# SIR JAMES YOUNG SIMPSON AND ONE HUNDRED AND FIFTY YEARS OF CHLOROFORM.

**Dr Peter M.Worling.**

One hundred and fifty years ago on 4 November 1847, Professor James Young Simpson discovered the anaesthetic properties of chloroform in an experiment at his home in 52, Queens Street, Edinburgh. Because of his enthusiasm, and despite opposition from the Church and some of his contemporaries, he was instrumental in launching the age of modern anaesthesia in surgery and childbirth.

J.Y.Simpson was born on 7 June 1811 at Bathgate, Linlithgow, the seventh son in a family of eight. His father, David Simpson, was the village baker, and his mother, Mary Jervay of Balbardie Mains, was of Huguenot descent. The family recognised that James was gifted academically and all of them took a part in helping to ensure that there was sufficient funds to enable him to go to university. It was many years before he was able to repay the debts he owed his brothers. At the age of fourteen, in 1825, he was enrolled at Edinburgh University in the faculty of Arts. He lodged in the same rooms as John Reid and an older man, MacArthur, who were medical students. Under their influence he changed his course in order to study medicine in 1827. He passed his final examination in 1830 and was made a member of the Edinburgh Royal College of Surgeons. As he was still in his 'teens, he could not take his diploma to become a Doctor of Medicine, consequently he took a job as assistant to Dr Thomson, Professor of Pathology at the University and continued his studies.

Thomson recommended that he should specialise in obstetrics. After obtaining his M.D. in 1832, he worked as a general practitioner in Edinburgh, coupled with a hospital appointment. In 1840 the post of Professor of Obstetrics was due to become vacant and Simpson was determined to be elected. He carried out an intensive lobbying campaign, printing his *curriculum vitae* at his own expense. This was widely circulated but there was much opposition to his appointment, partly because of his youth and that he was unmarried. Despite this he was appointed on 4 February 1840, having married on 26 December of the previous year.

Simpson had long been concerned at the level of suffering that was an everyday part of child-birth and the operating theatre. With others he had experimented with hypnotism, known at that time as "Mesmerism", and although he was impressed with its effect and used it in cases of insomnia, he was concerned that it seemed to have "an undue influence on weaker minds."

There was a long history of attempts to dull pain. The Chinese had used Indian Hemp for well over a thousand years; opium was also used extensively. A surgeon in the twelfth century was reported to have used mandragora as an ingredient in a solution in which a sponge was soaked and held to the patient's nose. However, as the patient did not always return to consciousness the treatment was discontinued.

In more recent times, Sir Humphry Davy experimented with nitrous oxide, and around 1800 showed that its inhalation relieved headache and other pains. This work seems not to have attracted much attention until 1844 when Mr Colton was lecturing on its properties to an audience in Hartford, Connecticut. Horace Wells, a dentist, was a member of the audience and was impressed with the effectiveness of the gas. The next day, Colton administered the anaesthetic while a Dr Rigg extracted one of Wells' teeth. This was a success but further experiments were not so, mainly because the dosage used was insufficient and as a consequence the use of nitrous oxide lapsed.

Michael Faraday in the United Kingdom had shown in 1818, and John Godman a few years later in America, that the inhalation of sulphuric ether had a similar effect to nitrous oxide. This was not treated seriously for many years and what became known as 'ether frolics' were reduced to party amusements. Ether was first used clinically in America on 30 March 1842 by Crawford Long to anaesthetise his patient while removing a cyst. This took place in a country area and received no publicity. It was left to William Thomas Green Morton, an American dentist, to change this. he wanted to experiment with nitrous oxide but was persuaded by Charles Jackson, a doctor and scientist, to try using ether.

Morton soon saw its potential and arranged for a successful trial at the Massachusetts General Hospital on 16 October 1846. Subsequently, in an attempt to make money out of his findings, he managed to patent ether by implying that his material had a secret ingredient. this had some effect on the method of administration but did not prevent its use.

These experiments became known in Britain and a claim for the first use of ether in this country has been made by the Dumfries and Galloway Infirmary where it was administered by Dr William Fraser who had just come from America, for an amputation by Drs. William Scott and James M'Lauchlan on 19 December 1846. The very same day a Dr Francis Boott of Gower Street, London, and a dentist, James Robinson, extracted a tooth painlessly using ether anaesthesia. Two days later, Professor Robert Liston at University College Hospital, London, amputated a thigh using ether.

Simpson's first midwifery case in which he used ether was on 19 January 1847. He continued to use it but was not satisfied with its action and persisted in his search for



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a substance which was more effective, could be used in smaller quantities and was less irritating on inhalation. He and his assistants inhaled many substances until David Waldie, late of Linlithgow, a surgeon and chemist, In October 1847 suggested they should try chloroform, also known at that time as perchloride of formyle. Waldie promised to make available to him a particularly pure preparation of the anaesthetic but was unable to do so immediately as the Liverpool Apothecaries' Company where he worked was still not re-built since the fire in July of that year. Duncan, Flockhart's of Edinburgh had made elixirs and syrups for Simpson so he asked them to supply a quantity of chloroform; it was manufactured in the basement of their pharmacy at 52, North Bridge by David Hunter, Ph.C., a partner in the firm.

Simpson was not impressed with the appearance of the liquid and it was some days before he tried inhaling it on the evening of 4 November 1847. Thomas Keith, a medical apprentice, and James Matthew Duncan were present, and Keith was the first to inhale the chloroform, followed by the others. They were watched by Simpson's wife, her sister Miss Grindley, her niece Miss Petrie and her brother-in-law Captain Petrie. The results, which ended with all three asleep on the floor, so impressed Simpson that he presented a paper to the Medico-Chirurgical Society on the 10th. of the month, followed by a public trial at the Infirmary on the 15th. Simpson wrote, "I have had an opportunity of trying the effects of the inhalation of chloroform today in three cases in the Royal Infirmary of Edinburgh." The first was a five year old boy who had "awakened about half an hour after the operation with a clear, merry eye, and a placid expression of coutenance wholly unlike what is found to obtain after ordinary etherisation." Shortly afterwards, the first child to be born with the help of chloroform was to the wife of a medical colleague; she was named Anaesthesia.

Because Simpson believed that chloroform was more effective and safer than ether, and also because the public wanted to be treated with the latest discovery, chloroform quickly gained popularity, although ether was still in use. Simpson recognised that there were dangers in over-dosage and thought that its administration should only be by medical practitioners. By 1864 there was a growing concern at the number of deaths occurring when chloroform was used alone. This led to the Royal Medical and Chirurgical Society of Great Britain recommending the use of chloroform and ether mixtures. There was as a result a greater use of mixtures and some preference for ether alone. Chloroform was however recognised as the best choice for use in labour where overdosage was rare, and it continued to be the anaesthetic of choice at the Royal Infirmary of Edinburgh for many years, perhaps out of loyalty to Simpson.

James Young Simpson's contribution to medicine was recognised by a knighthood on 3 February 1866. His motto was *Victo Dolore* (Victory over Pain). he died four years later in 1870.

The popularity of chloroform was of great benefit to Duncan, Flockhart & Co. who from this beginning grew into one of the major manufacturers of ether, chloroform and other anaesthetics. their business was given a boost by the outbreak of the Crimean War in 1854 which led to a significant increase in the demand for chloroform.

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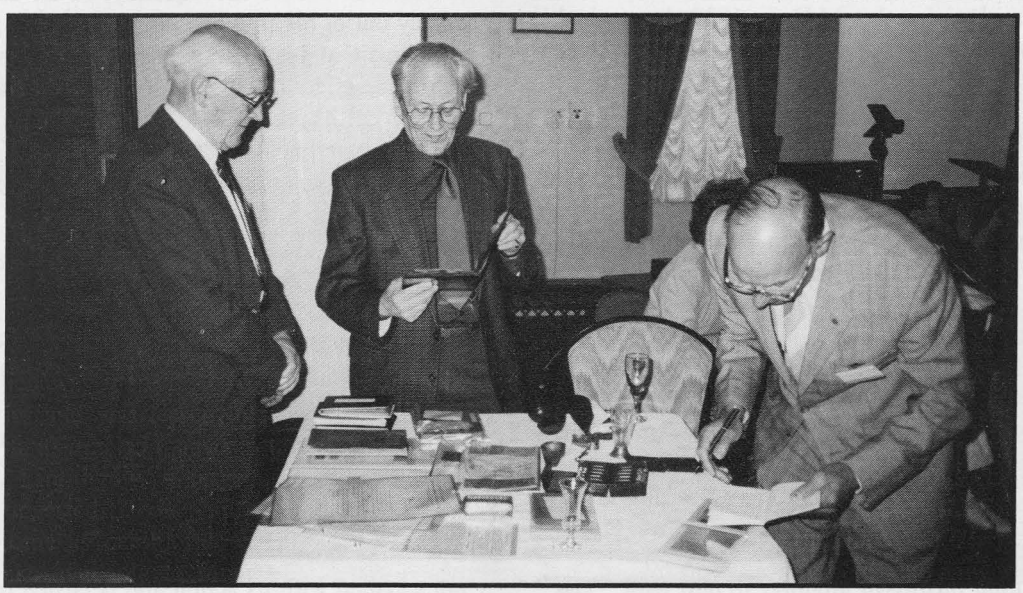

Looking at BSHP members' treasures in Bournemouth



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## SILVER NIPPLE SHIELDS.

**W.A.Jackson.**

In her book, *Breasts, Bottles and Babies,* Valerie Fildes shows that some nursing mothers were using nipple shields by the middle of the sixteenth century, but points out that they must have been employed much earlier as the problems for which they were used have existed since babies were first suckled up to the present day.[1] The difficulty most frequently encountered is soreness, often due to the nipples becoming cracked. In the past, these cracks frequently became infected, leading to ulceration, and in some cases, to the loss of the nipple itself, this being not uncommon in the seventeenth century. They were also used for inverted or retracted nipples and when obstruction or scarring had occurred during the nursing of a previous child.

She reproduces illustrations of shields from Reiff's *Schwangerer Frawen Rosengarten* (1545), *The Works of Ambrose Paré* (1634) and Scultetus' *The Chyrurgeon's Storehouse* (1674), as well as a silver shield dating from 1751 and a wooden one produced c.1830, both from the Cow & Gate Collection. She observes that they have also been made from lead, pewter, tin, horn, bone, ivory, wood, silver and glass

I believe that silver shields were first documented by John Scultetus of Ulm (1595-1645) in his book, an English translation of which was published in 1674. In it he described the nipple shield as "...a silver cap and full of holes which is applied...to the breasts that nurses may suckle the infants without trouble."[2] The Cow & Gate Collection has one with the hallmark of 1751, whilst Elisabeth Bennion in *Antique Medical Instruments* remarks that most silver examples to be found date from about 1800, and that the more sophisticated ones had a row of holes round the base for ventilation.[3] At first sight, this might seem to be a logical explanation for these holes, but one must remember that if an infant is to apply sufficient suction to extract milk from the breast then the shield must be held firmly against the soft tissue surrounding the nipple. This would prevent access of air, and indeed if it did not, the infant would be unable to produce the vacuum necessary for suckling.

Another argument against this idea, is that I have yet to see a silver shield bearing the marks of teeth which one would expect, as in the eighteenth century the age at which an infant was weaned varied from 1 to 37 months, and was usually eight months.[4] In 1802 the recommended age was six to eight months if the infant had four teeth, and by 1826 had risen to eleven to twelve months providing several teeth had been cut.[5]

A clue to the real purpose of these peripheral holes is to be found in Nicholas Culpepper's *A Directory for Midwives* published in London in 1737. His advice was, "That a child may suck without pain to the woman, let her have a tin or silver nipple, and cover it with the pap [a teat] of a new killed cow, and let the child suck that."[6]

The confirmation that silver nipple shields were covered with a teat when in use is to be found in a letter of 5 November 1810 to the *Edinburgh Medical and Surgical Journal* from a gentleman who assumed the pseudonym of 'Nutrix'.[7] He observed that many doctors, especially those in provincial towns, were in favour of mothers nursing their own children but saw them abandon the practice when the infant was a few weeks old due to the excruciating pain arising from sore nipples. However, if they were to use "... the false nipple, now so generally used in London and so easily procured in every part of the country, almost every case of mere excoriation might be cured in two or three days, and very many instances of abcesses in the breasts would be prevented by assisting the child to draw off the milk, which in a few hours will harden, if neglected, and occasion inflammation."

The shield and teat were well known in and about London, and in constant use at the Lying-in Hospital there. In every case where he had known it to be tried, it had been suggested by a "sympathising female friend" rather than the medical attendant. Although not all children could suck hard enough to create a vacuum in the shield, he had known puny children who could suckle to use the shield, but to be unable to do so without it, probably due to the mother's nipples being too small and short to be retained in the infant's mouth without effort. Silver shields could be purchased for twelve shillings (60p.) at Savigny's[8]

The teat of a "fresh slain heifer" was carefully scooped out until it was the thickness of Morocco leather This had to be done with the greatest care as any puncture in the side of the teat would render it useless. It should be white and delicate to avoid risk of the infant rejecting it. After being thoroughly washed in cold water, it was stored in spirit until an hour or two before use. Then it was soaked in cold water to remove all taste of spirit, wiped dry and sewn "closely and firmly" to the row of holes in the shield. There it remained "... till it is become bad from use" when it had to be exchanged for a fresh one. The teat had to be a little longer than the shield so that it would yield in the child's mouth. It was to be well washed after each use and stored in cold water unless the weather was hot, in which case it should be stored in diluted spirit and carefully rinsed each time before use.

'Nutrix' mentioned that nipple shields could also be made from ivory, and that these could work well, but in a footnote warned that "The instrument called Mrs Relfe's suckling-assistant often fails because the ivory shield is not turned after the model of the silver one "

In 1830 a Parisian midwife, Madame Breton, advertised a nipple shield with a cow's teat attached which she had 'designed' and patented. Her circular proclaimed that:

> "They have the advantage of preventing cracks and the most horrible pains which result from there from and remedy the absence of severe malformation of the nipple. The nipples with which they are fitted are soft when they are to be used at once in Paris or suburbs,



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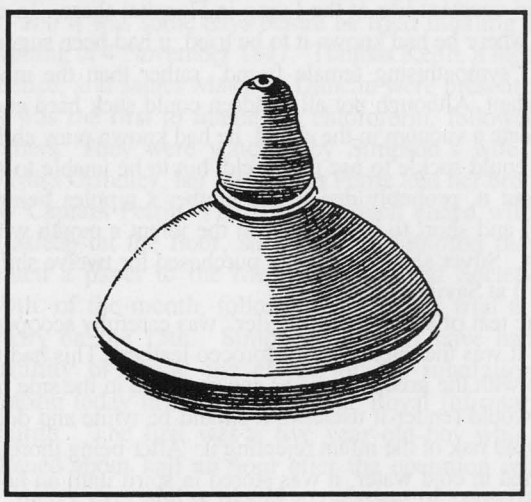
but to facilitate transport whenever necessary, Mme. Breton can furnish them dry. These must remain in fresh water 15-24 hours until they have recovered their suppleness before being presented to the infant. When the infant has finished nursing they should be carefully washed and tested and placed under an inverted glass to prevent drying out.

Price, a nipple shield mounted on an ivory base 9 francs, of boxwood 5 francs, for changing the small nipple when it is used 5 francs 50c."[9]

In June 1825, H.B.Turner the apothecary to the Norwich Dispensary, noted that the principal objection to the nipple shields currently in use was the difficulty of sewing on the teats sufficiently closely for the infant's sucking to create a vacuum.[10] Unless they were treated with extreme care the teats shrank, and soaking them alternately in water and spirit



Nipple shield topped with cow's teat, Madame Breton, Paris, 1830.

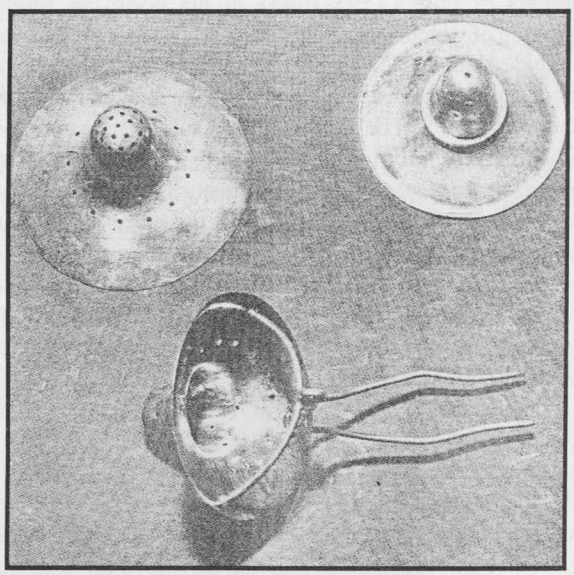
was troublesome. He suggested that the teat be tied to an elevated rim formed on the outside of the shield near its apex. Shrunken teats could still be used on such a shield, and if the shield itself were more pointed with a rim near its end to receive the lips of the child, it might be possible to dispense with the teat altogether. If the shield was made from strong double flint glass, he believed that this would be strong enough to support the atmospheric pressure. This is the earliest reference I have found to the possible use of glass for the manufacture of these devices.

The Drake Collection contains an undated silver shield with a circular ridge near its apex similar to the one suggested by Turner. Drake proposes a date of about 1800 for its manufacture, but it could well have been made after the publication of Turner's suggestion. Significantly there are no peripheral holes in this shield.[11] Two similar shields made from pewter were shown on a television antiques panel game, "Going for a Song" on 19 February 1997, but apparently nobody realised that they were probably originally used with a cow's teat or the significance of the ridge and the absence of peripheral holes. A date of about 1800 was suggested for their manufacture.

In 1839 the American, Charles Goodyear, heated raw rubber with sulphur and white lead to produce a product with greater elasticity, did not stick to itself, had a smoother surface and was far less susceptible to changes of temperature.[12] This became known as 'vulcanised rubber' and in 1845 an artificial teat made from rubber was patented in the United States by Elijah Pratt.[13] Rubber teats mounted on glass shields soon began to replace the old shields with their attached cows' teats though these lingered on for a number of years. In 1853 in the section on sore nipples, John South wrote in his *Household Surgery or Hints on Emergencies*:

"It is also advisable that the nipple should be protected by a shield of silver or ivory, the former being best as it can be kept clean, covered with a cow's teat which is easily obtained and may be kept in a little weak spirit and water. The shield should always be sufficiently large to receive the nipple without squeezing, and to allow its swelling as the milk is drawn through it; and it should only be worn whilst the child is being suckled."[14]

Rather surprisingly, 'Prepared Calves' Teats' were still being offered for sale in 1910 at a wholesale price of 3s.7d. (18p.) for a bottle containing one dozen teats.[15] One can not help wondering how long they had been in stock.



Sterling silver nipple shields, London, 1797-1800

I suspect that many silver nipple shields were melted down for their scrap value after they ceased to be used, but one example in the Drake Collection has been adapted by the addition of a piece of wire shaped like a hairpin. This could have been inserted in a teapot spout and the shield would then have acted as a tea strainer. One in my own collection shows traces of silver solder on the rim and the apical holes have been enlarged, suggesting that at one time it might have been used for the same purpose after addition of a handle.



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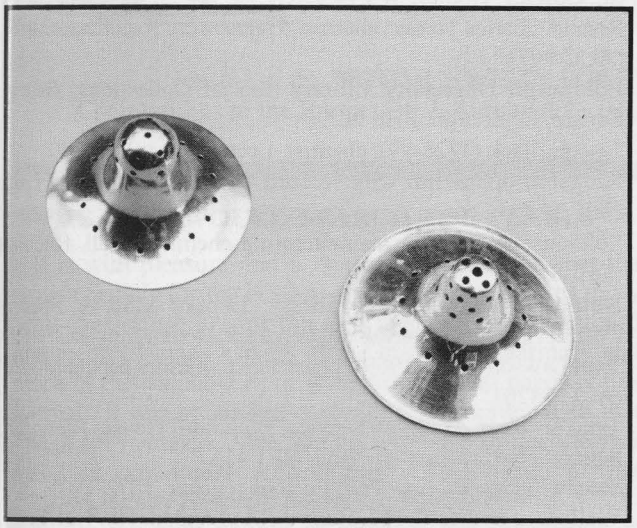
All things considered, it is surprising that so many have survived. There are many more silver shields to be found than pewter, wood or ivory ones, although similar shapes were made of these materials. Probably the intrinsic value of the silver has been responsible for their preservation. However, the Cow & Gate Collection contains a wooden shield with a suggested date of 1830, and as this has a raised collar and lacks peripheral holes as suggested by H.B.Turner, this is probably about right.[16] Certainly these shields are attractive items and well worth acquiring by anybody interested in 'Infantilia'.



Silver nipple shields, London, 1805 & 1810, author's collection

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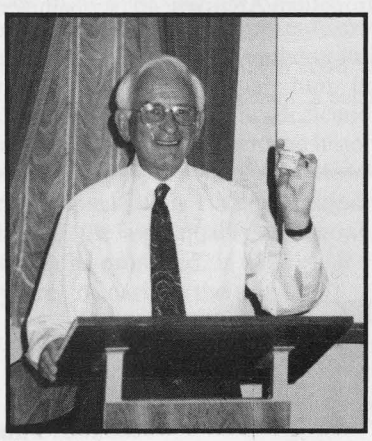
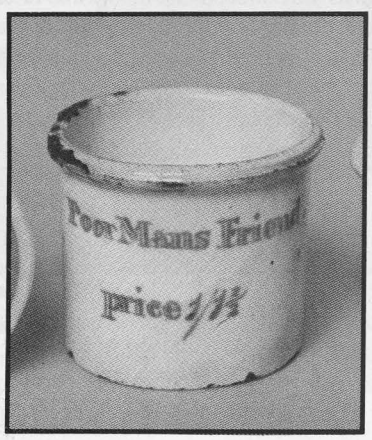
9. Drake, op.cit., p.317.
10. The *Lancet*, 1825, vol. 8, p.87.
11. Drake, op.cit., this article also contains a drawing of a shield with a cow's teat attached.
12. J.A.Brydson, *Rubber Chemistry*, 1978, London, Applied Science Publishers, p.2; A.I.Walder, "A Historical Review of the Naso-Gastric Tube", *Surgery*, vol. 51, 1962, p.409.
13. G.O'Hara, *The World of the Baby*, 1989, N.York, Doubleday, p.86.
14. J.F.South, *Household Surgery or Hints on Emergencies*, 1853, 4th.edn. London, G. Cox, pp.266-267.
15. *Wholesale Catalogue of Surgeons' Instruments etc.*, 1910, Manchester, J.Woolley, No.B 14553, p.892.
16. *Cow & Gate Collection*, op.cit., illus. No.73.


The first two illustrations are reproduced from "Antiques of Medical Interest: Nipple Shields" by T.G.H.Drake, Jnl.Hist.Med.& Allied Sci., 1946, pp. 316 - 317

Title page of "Schwangerer Frawen Rosengarten"



During his talk on "Some Dorset apothecaries and pharmacists" at Bournemouth, John Hunt showed an ointment pot of "Poor Man's Friend" which originated at the Beach and Barnicott pharmacy of Bridport, said to date from 1788.



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## Review.

*Thomas Glass, M.D., Physician of Georgian Exeter.* by Alick Cameron Devon Books, Exeter, 1996, pp.183, illustrated.

Thomas Glass, who claimed to be the originator of Glass's Magnesia, was born in Tiverton, Devonshire, in 1709. He studied medicine at Leydon and in 1741 was appointed to the newly founded Devon and Exeter Hospital He practised in Exeter for the rest of his life which ended in 1786.

Cameron in his short biography describes Glass as a thoughtful, bookish man who espoused new ideas with energy and enthusiasm. His life is reviewed against the background of contemporary provincial medicine, drawing attention to his treatment of smallpox by inoculation, his commentaries on fevers and his studies of the epidemics with which he was called upon to deal. One chapter is devoted to letters in which we see the subject through the eyes of his patients. In one revealing letter a young man dying of consumption observed, "I could not press a fee upon him. He said I was welcome to his advice."

The book has numerous quotations from the works by Glass and the reader is left to pick out information on the drugs and medicines recommended. The item receiving most attention is magnesia. Thomas Glass discovered a method of making a light form of *magnesia alba* which he passed to his brother Samuel, an Oxford surgeon-apothecary, who used it on a commercial scale. before selling out to Peter Delamotte in 1772. At that time Thomas Henry had started manufacturing *magnesia alba* and publicly declared the inferiority of the Delamotte product, clearing with the intention of cornering the market. Samuel was dead and Dr Thomas Glass entered the dispute, somewhat to the surprise of Henry who was taken aback to find that his principal adversary was not Delamotte, but the "ingenious and learned author of the *Commentaries on Fever.*"

Cameron gives a detailed account of the ensuing controversy which is generally in favour of Glass. The account, however, does call for a definition of "Henry's Magnesia". The Glass product was the carbonate which Henry also produced when he entered the business in 1772 and the circumstances indicate that this was the product for which he claimed superiority. The term "Henry's Magnesia" however needs to be defined because it may refer to the carbonate as above or to the oxide. In 1756 Joseph Black published his studies of magnesia which included an experiment in which he calcined the carbonate This was the method Henry used to produce the more effective magnesium oxide which was widely marketed

M.P.Earles.

## Useful Documents.

The Royal Commission on Historical Manuscripts has again kindly sent us a digest of major accessions to record repositories in 1996 that relate to pharmaceutical history. Readers should note that some deposits may not yet be fully listed and the appearance of a collection in this digest does not necessarily mean that it will be available for research. Further enquiries regarding access should be addressed to the staff of the relevant repository.

**Dudley Archives & Local History Service**, Mount Pleasant St., Coseley, Dudley. WV14 9JR.
Ronald Charles Turner, chemist, Halesowen. Records (addnl.), (ACC 997)

**Edinburgh University Library** Special Collections, George Square, Edinburgh. EH8 9LJ.
Joseph Black (1728-99), chemist. Lecture notes, (E96.40)

**Kingston-upon-Hull City Record Office**, 79 Lowgate, Hull. HU1 2AA.
Lofthouse & Saltmer, manufacturing chemists, Hull. Records (DBLS)

**Nottingham University Library**, Dept.of MSS & Special Collns., Hallward Library, University Park, Nottingham. NG7 2RD.
John Lawson (1878-1969), pharmacist Family papers (addnl) (ACC 1420)

**Tyne & Wear Archives Service**, Blandford House, Blandford Square, Newcastle-upon-Tyne. NE1 4JA.
Steel's Pharmacy, Low Fell. Poisons register, 1872-1905.

**Wellcome Institute**, 183, Euston Rd., London. NW1 2BE.
Fulham Road Pharmacy, London. Prescription books,1889-1904, (GC/189)
French medical recipe book, "secreta secretorum", 17th.c. (MS 7298)
Annotated Bristol pharmacopoeia *Manuale Medicanum* 1816. (MS 7218)
Thomas Grimshaw, apothecary of Wormwood Scrubs Prison. Recipe book, c.1900, (MS 7144)
Thomas Newborn Robert Morson, pharmaceutical manufacturer, London. Papers relating to him and his company, 19th-20th.c (ACC. 350417)

**N.Yorks. County Record Office**, Malpas Rd., Northallerton. DL7 8TB
Bedale chemist. Prescription books, 1892-1929, (ZRX)

**London Metropolitan Archives**, 40 Northampton Rd., London. EC1R OHB
Howards & Sons Ltd., manufacturing chemists, Ilford. Correspondence & miscellaneous records, 1890-1961. (ACC/1037)

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# PHARMACEUTICAL HISTORIAN

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Contributions to the Editor: Dr. J. Burnby B.Pharm., PhD., FRPharmS., FSA. 36 York Place, Edinburgh. EH1 3HU

## "HE WHO WOULD SEARCH FOR PEARLS"

It is with pleasure and a degree of satisfaction that the British Society for the History of Pharmacy celebrates thirty years of existence. During this time members have researched and recorded many aspects of the history of pharmacy and much of this valuable work is recorded in past pages of this journal. It was at our last conference in Bournemouth that one of our members, Miss Wallis, reminded us that the year 1997 is our Pearl Anniversary. This issue of the *Pharmaceutical Historian* marks this notable event.

While the high quality of research and publication is encouraging, we have remained conscious that there is a need to reach out to more members of the pharmaceutical and associated professions, and to increase interest in historical studies related to pharmacy. Too many, particularly younger people, are still unaware of the existence of a Society which could help them to understand better the origins and development of their calling, and thus to focus more accurately their future aspirations. To this end our Society has recently endeavoured to raise its profile at pharmaceutical conferences, and through the pharmaceutical press. The introduction of our much admired series of souvenir mugs and drink mats on the Society's stand at conferences has been far more successful than we could have hoped. A useful increase in membership has resulted.

A note of sadness coincides with our anniversary year. The death in February of Leslie Matthews in his hundredth year was mourned by all who knew him. Instrumental in the establishment of our Society, his dedication and support were unfailing and his contribution to the history of pharmacy was outstanding. The Leslie Matthews Medal. of which he was the first recipient, is a lasting tribute to his memory and a marker of the high quality of historical research in pharmacy which he promoted. It will be our concern, in the next thirty years, to continue the tradition.

*"Errors, like straws, upon the surface flow;*
*He who would search for pearls must dive below."*
*(Dryden)*

John Hunt, President

## Contents



Mrs.Isobel Myatt at her desk. We are indeed sorry to say "Good-bye" to Isobel at York Place who has worked so hard and efficiently for BSHP. We wish her all happiness for the future.



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## "Now the all-engrossing subject"

### Dr.J.Burnby

It was thus that Peter Squire in January 1847 described the introduction of ether anaesthesia in England; and he should have known as he was right in the thick of it. A whole evening meeting of the Pharmaceutical Society on 13 January 1847 was devoted to the subject and different types of inhalers displayed. Many pharmacists turned anaesthetist, at least for a period, such as William Hooper and his assistant, a Mr Griffin, Jacob Bell and his apprentice M.C.Furnell. Others were concerned with producing the inhalers at short notice as did "Mr Julion, a talented chemist" of Wolverhampton on 1 January 1847.[1]

The news-story lying behind the discovery of ether anaesthesia in this country is well known. Dr Francis Boott, MD(Edin.) of 24 ,Gower Street, London, received on Thursday, 17 December 1846 an important letter from his friend Dr Jacob Bigelow of Boston, Massachusetts. With a father's pride, Bigelow related how his son, Henry, (1818-1890), surgeon at the Massachusetts General Hospital had not only witnessed W.T.G.Morton, a Boston dentist, successfully administering ether for the removal of a tumour below the jaw on 16 October 1846. but had reported it to the American Academy of Arts and Sciences and read a paper on it to the Boston Society of Medical Improvement some three weeks later. The paper entitled, "Insensibility during surgical operations produced by inhalation" was quickly published in the *Boston Medical and Surgical Journal,* and a full account was given in the *Boston Daily Advertiser,* dated 19 November 1846. A copy of the newspaper was enclosed with his letter to Francis Boott.

Boott on receipt of this news promptly informed Robert Liston (1794-1847), senior surgeon at what is now called University College Hospital, and also wrote a letter to the *Lancet* for publication, "On the anodyne effects of the inhalation of the vapour of strong, pure sulphuric ether".

Furthermore Francis Boott called on James Robinson, a dentist who lived only a few doors away at No.7, Gower Street, and suggested that they should try out this discovery when next he was extracting a tooth. Accordingly, this was done with great success on Saturday, 19 December when Robinson extracted a molar from the jaw of a Miss Lonsdale in Dr Boott's study. Further extractions were carried out later using ether as an anaesthetic but these proved to be dismal failures. In a second letter to the *Lancet,* Boott wrote, "Yet the same apparatus was used in three or four cases afterwards and failed in each case to produce insensibility." This Boott attributed to a defect in the valve of the mouthpiece, "... by which the expired air was returned to the bottle instead of passing into the room."[2]

Surprisingly little has been written about Francis Boott (1792-1863) who was instrumental in the introduction of ether anaesthesia to England, yet he came from a family with an interesting Anglo-American background.

His grandfather had been a reasonably successful market gardener in Derby with a shop in King Street until his early death when only 44 in 1776. He left a widow in straitened circumstances with seven children to bring up. However, they were not without friends, in particular the Wright family of which the best known member is the painter 'Wright of Derby'. Joseph Wright's brother, John, a Derby attorney like their father, probably put up the money necessary for the two older Boott brothers, James and Kirk, to travel to London to see if they could mend the family fortunes. Before long, Kirk (1756-1819) decided to travel further, and in 1783 when 27 ended up with a shop in Union Street, Boston, USA, where he hoped to sell the goods he had taken out with him and those sent to him by friends.

At first he was far from successful and during this doleful time John Wright continued to help support the family in Derby. The following year, matters improved and continued to improve, so much so that in 1785 he married Mary Love the daughter of the Scots captain in whose ship he had crossed the Atlantic. They had nine children. Kirk did not forget either the land of his birth or his English relatives, and on his death left substantial legacies to his two sisters. He educated his two eldest sons at Rugby School; the second son, Kirk II (1790-1837) joined the British army and fought through the Peninsular War campaign.[3]

Whilst in England, Kirk made Derby his home and so came to know his future wife, Anne the daughter of Thomas Haden, a surgeon and apothecary practising in that town and once the apprentice of Richard Wright, the painter's youngest brother.[4] They were married at St., Michael's, Derby in November 1818, shortly afterwards going to America.[5]

Francis Boott, Kirk II's younger brother by two years, was born in Boston on 26 September 1792 and educated at Harvard College where he was a near contemporary of Jacob Bigelow (1786-1879), both of them sharing a keen interest in botany. Leaving Harvard in 1810, Francis came the following year to England for a stay of two or three years. In late 1816, his father sent him back to this country once more to look into the Boott business affairs, at which he seems to have been not at all adept. Bigelow had supplied him with an introduction to James Smith and the Linnean Society, so one suspects he spent more time on botany than commerce.

He returned to America for a short time after his father's death but soon came back to England for a number of excellent reasons. He was attracted to the life here,and in particular to a Mary Hardcastle of Derby; they married in 1820. It was then he decided to qualify in medicine, gaining his MD at Edinburgh in 1824. His initial training



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of about two years was with John Armstrong, then after some time in Edinburgh he gained further experience in Paris before starting to practise in London.

For nearly five years he also lectured in materia medica, and later in the practice of physic at the Webb Street private school of medicine. His life as a practising doctor was however short-lived as in about 1833, having received an ample legacy, he retired; but as we have seen, this did not mean that he had lost interest in medicine.[6]

His hasty note to Liston almost immediately bore fruits. Many years later, William Squire (1825-1899), by then MD, FRCP, wrote of his early involvement in ether anaesthesia in the *Lancet*.[7]

"My duties at this time were chiefly at the College but I frequently attended the surgeons' visits and mostly followed Liston. He was a friend of my uncle Mr Peter Squire. On his Saturday's visit [19 December] Liston mentioned to me the letter that Dr Boott had received from Dr Bigelow senior and asked me to confer with my uncle as to the best way of ensuring success. Mr Robinson, dentist in Gower Street was said to have extracted a tooth without pain, but no great success attended the second trial. Liston took me to the other end of Gower Street with some ether from the hospital. [He could not remember whether it was Boott's or Robinson's house.] The glass vessel used was too small and I believe Mr Robinson afterwards used the sponge alone covered by a folded cloth with more success.[This however would appear not to be true.]

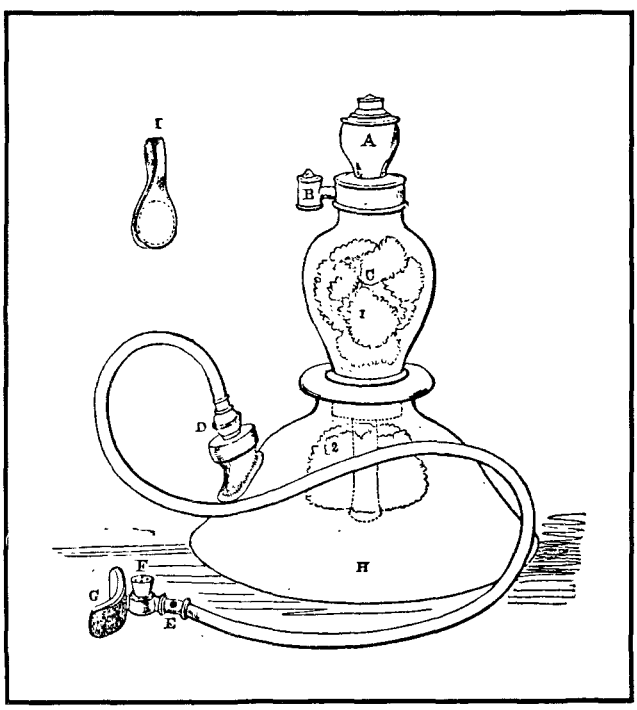
"Mr Liston took me on to Oxford-street [the well known pharmacy of Peter Squire] where ether was given in this way to one of the assistants ... the insensibility that followed was not of long duration but it was sufficient. There was a strong smell of ether in the room and it seemed that with a better store of vapour and less expenditure of ether a more steady effect might be produced, and Liston said that if this could be ensured and maintained for one minute he would amputate in the case mentioned on the following Monday. [A patient whose state of health was already very poor but where amputation of the leg was essential.]

"My uncle became much interested ... and with his energetic assistance a suitable inhaler was improvised. This is substantially the apparatus now preserved at University College Hospital. A large, broad-based, conical glass vessel with openings at the top and at the lower part was found; a good-sized tube was fitted to the side opening, a sponge was introduced from the upper opening to receive the ether, and a smaller glass vessel with sponges on which ether could be poured was fitted into the top. Before adding any ether we found that breathing could be easily carried on through the apparatus when the free end of the tube was brought near the mouth and encircled by a folded towel held close to the face and covering both mouth and nose."

Under Liston's supervision several trials were carried out on young Squire. "Mr Taylor the chemist of No.13 Baker-street assisted at these experiments and was the first to undergo a more prolonged unconsciousness under my management. More than a minute from the completion of the inhalation was allowed to elapse before his sensibility to pain was put to the test; complete anaesthesia continued for two or three minutes.

"Liston was informed of this further success at once, and called upon Mr (now Sir) Edwin Saunders on Sunday morning to see if the effects could be further tested that day in tooth extraction .... I again took ether and gave it to others while Liston observed the degree of anaesthesia produced and the duration of it. This was increased and prolonged by replacing some of the upper sponges ... with fresh sponges and ether."

"My uncle only half liked the inhalation experiments: he did not give the vapour but said he would find the glass and would be responsible for the purity of the ether which he very liberally supplied. Some of it was washed ether, any admixture of alcohol thus being removed."[8]




Peter Squire's Ether Inhalation apparatus

Peter Squire (1798-1884) of 277, Oxford Street had a reputation for ingenuity in devising equipment for special purposes and was often consulted by doctors for the construction of experimental apparatus. He had been for about eight years (first as an assistant and then in partnership) with the operative chemist, Alexander Garden of Oxford Street, where the supply of chemical and scientific equipment had formed an important part of the business.[9]

At the 13 January 1847 meeting of the Pharmaceutical Society, Peter Squire demonstrated his inhaler, and other members discussed their own designs, including Jacob Bell.



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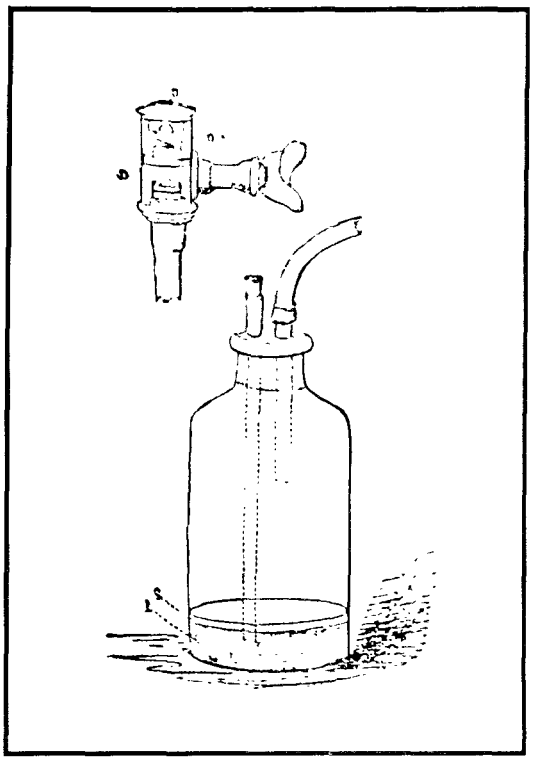


Bell's inhaler

Bell's apparatus was a simple bottle into which was introduced ether to which was added a little water, a flexible tube and a mouthpiece of glass for easy cleaning, and a valve-box behind the mouthpiece with non-return valves of glass discs for expiration and inspiration which acted as indicators as to whether the mouth-piece was correctly fitted. Bell pointed out that this inhaler was cheap to make and easily constructed by any country surgeon. The *Medical Times* described it as being efficient, compact and elegant. This apparatus with ether supplied by Bell (who acted as anaesthetist) was used at Middlesex Hospital on 25 January 1847 in a difficult lithotomy with John Tomes, surgeon-dentist.[10]

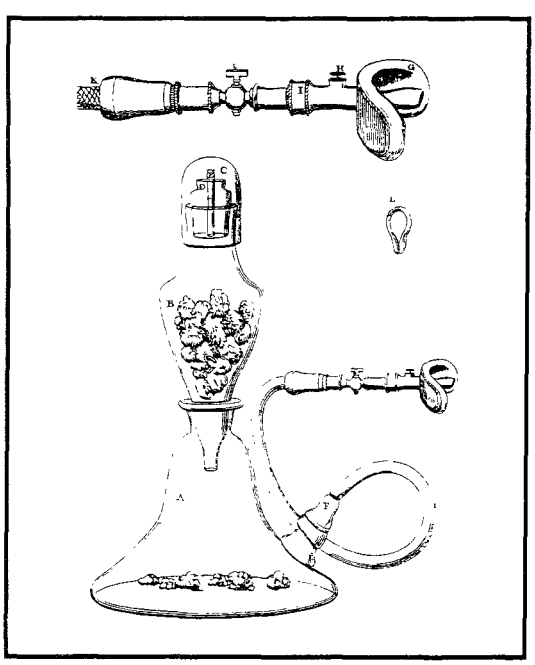
James Robinson after his initial success realised that he had used what he termed a "very imperfect apparatus", and had "another apparatus constructed combining the necessary powers of inhalation and exhalation; I tried it for the first time on my servant who in two minutes became perfectly insensible." Robinson had had little detailed description of the apparatus given to him in the paper by Bigelow. All he was told was, "A small two-necked glass contains the prepared vapour, together with sponges, to enlarge the evaporating surface. One aperture admits the air to the interior of the globe whence charged with vapour it is drawn through the second into the lungs. The inspired air thus passes through the bottle but the expiration is diverted by a valve in the mouth-piece, and escaping into the apartment is thus prevented from vitiating the medicated vapour."

This description appears to be very similar to that of a rather poor drawing which appears in a French journal descxribing an operation on the lip successfully carried out with the aid of ether anaesthesia on 15 December 1846. A drawing of the apparatus had been supplied to the hospital by Willis Fisher in Paris, a correspondent of Morton's; this had become necessary because the specimen apparatus brought over to France had been held up by the Customs.[11]

When the problems of making a reliable ether inhaler became apparent, it seems that Robinson and Boott went to a pharmacist, William Hooper of 7, Pall Mall East, for him to make a better model, one which was to prove very successful.

Hooper was another pharmacist who was interested in apparatus, believing it to be the way forward for the nineteenth century. In the 1830s, he had gone into partnership with a Dr Friedrich Adolphus Augustus Stuve of Dresden who since 1825 had been the proprietor of the Royal German Spa in Brighton patronised by George IV. This resulted in the formation of the mineral water firm of Hooper, Struve & Co. which later expanded into a range of sweetened drinks.[12] Nor was this William Hooper's only investment.

At the British Pharmaceutical Conference held at Bath in September 1864, Thomas T.P.Bruce Warren who styled himself 'Preparateur' in the laboratory of William Hooper in Pall Mall and at 55, Grosvenor Street, as well as at Mitcham, read a paper on the cultivation of medicinal plants.[13] Distillation of the essential oils was carried out on a large scale, the stills being from a thousand to two thousand gallons in size. Constructing a suitable inhaler to Robinson and Boott's specifications would have presented few problems to Hooper.



Robinson's apparatus as it appears in his book, p. 17

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It is remarkable that the inhaler which received so much publicity for Robinson, Boott and Hooper in the *Medical Times* of 9 January 1847 and in Robinson's own book published during the last two weeks of February 1847 shows such a close similarity to that devised by Squire - and neither bears any resemblance to the one used by Morton or to the first inhaler made in France.

Could one constructor of the inhaler have copied the work of the other ? Richard Ellis has suggested, admittedly on rather slim and quite different evidence, that there was a degree of ill feeling between Liston and the Squires on the one hand, and Boott and Robinson on the other.[14] Could this have been the cause of it ?

**Notes and References.**

1. J.Robinson, *A treatise on the inhalation of the vapour of ether*..... London, 1847, Webster, reprint, 1983, p.47.
2. Ibid., p.6. Robinson is quoting from Boott's second letter to the *Lancet*, dated 21 December 1846.
3. When the USA entered the war against Britain, Kirk's regiment was ordered to America but he was granted leave of absence.
4. Thomas Haden, (born 1761) later became Richard Wright's partner and a close friend of Erasmus Darwin. He married Sarah Wallis, once the boyhood sweetheart of Kirk Boot I ; they had ten children. The eldest daughter married James Oakes, brother-in-law of Lyon Playfair, and the youngest son, Charles Thomas Haden (1786-1824), played an important role in the introduction of colchicum for the treatment of gout. See, A C. Wootton, *Chronicles of Pharmacy*, vol II, pp 183-6.
5. Kirk Boott II established a flourishing textile industry and is regarded as the founder of Lowell, a cotton manufacturing town in Massachusetts
6. Information on these families has been gleaned from J.LHobbs, "The Boott and Haden families and the founding of Lowell", *Derbys. Arch. Jnl.*, (1946), vol.19, n.s.,pp.59-74.
7. *Lancet*, 22 December 1888, pp.1220-1.
8. When Dr Philpot Brookes, MD, MRCS, reported the use of ether at Cheltenham General Hospital for a mastectomy early in January 1847, he points out that they had used Howard's sulphuric ether which had been washed and re-distilled "by a chemist in the town, a Mr Smith". In his book, Robinson relates that he too had been in correspondence with Howards concerning the purity of ether.
9. R.Todd, "Peter Squire:1798-1884", *Pharm.J.*, 7 April 1984, p.420.
10. It seems that Tomes and Bell had already experimented with both chloric ether (chloroform in alcohol) and sulphuric ether (ether) before this date, something which Dr Pereira did not fail to point out in a letter of 18 November 1847 to Dr Simpson. Success with this dilute preparation of chloroform was variable, though Jacob Bell's registered apprentice M.C.Furnell (later surgeon-major in the Madras Army) at Bell's suggestion introduced it with some success into St. Bartholomew's Hospital in the summer of 1847. See O.P.Dinnick, "Jacob Bell and his trial of Chloric Ether at Middlesex Hospital", *Pharm. in Hist.*, vol.33, (1991) pp.70-75, and Burnby, Cloughly and Earles (eds.), *My Dear Mr Bell*. AIHP and BSHP, Madison and Edinburgh, 1987, p.35
11. M.Zimmer, "Les premiers brevets d'invention en anesthesie générale", *Le Chirurgien-Dentiste de France*, 28 September 1995, pp.31-2.
12. William IV granted the firm a royal warrant in 1835 which was still held in the 1970s; ultimately it fell into the hands of Charringtons United Brewers. See *Herts Countryside* vol 25, May 1971 p.12
    An illustration of Struve's aerated water plant is shown in *Chem Drugg*, 27 June 1936, p.760.
13. He related that at Mitcham the principal plants cultivated were liquorice (932 acres), peppermint (219 ac.), lavender (172 ac.), roses (119 ac.), chamomile (55 ac.) and henbane (30 ac.), as well as lesser crops amounting to 109 acres. See *Pharm J.*, (1864-65), vol 6, p.256.
14. R.H Ellis, "Robert Liston's letter to Dr Francis Boott its reappearance after 135 years", *Anesthesiology*, (1985) vol.62, No.3, pp. 331-335.

## Review

**W.-D.Müller-Jahncke and C. Friedrich, *Geschichte der Arzneimitteltherapie*.** Deutscher Apotheker Verlag, Stuttgart, 1996, pp.296. ISBN 3-7692-2038-2(DAV). D.M.78.

The history of drug therapy is a vast and varied field intertwining strands from many sources. The authors of this text have skilfully presented a comprehensive review commencing with the early Grecian concepts of humoral pathology, then solid pathology related to the primitive atomic ideas, leading on in the 19th. century with rapid advances in science to cellular pathology, Paul Ehrlich's receptor theory, Emil Fischer's "lock and key" theory and finally in the current century to enzymes controlled reactions and computer models in drug design.

The theory of natural medicines such as Astrological Medicine, Hahnemann's Homoeopathy, Schlüssel's Biochemistry employing salts and Steiner's Anthroposophical Medicine are summarised before a review of plant, animal and mineral drugs.

An interesting account of drug dose forms through the ages, e.g. pills, precious stones, electuaries, draughts, salves, ointments, plasters, treacles etc. precedes a discussion of methods of formulation in the 19th. and 20th. centuries from the extraction press to tablet, capsule and aerosol manufacture and delayed action formulations. A substantial part of the text surveys the history of natural products including the Doctrine of Signatures, the magic medicine of the "filthy" apothecary, Paracelsian medicine and then the extraction of important alkaloids, glycosides, essential oils, vitamins, hormones, enzymes, blood products, antibiotics etc. Finally there is a survey of the synthetic drugs of the past century e.g. analgesics, narcotics, hypnotics, anti-epileptics, tranquillisers, anti-asthmatics, calcium antagonists, sulphonamides, anti-viral drugs,etc.

In a work embracing such a wide field selective omissions are inevitable; nevertheless a discussion of malaria omitting the work of Sir Ronald Ross who connected the parasites with malaria is surprising. Equally surprising is the omission of synthetic antimalarials such as mepacrine, so important during the Second World War, paludrine, pyrimethamine and proguanil. The book is well illustrated although the caption for Fleming's photograph (Fig.28) is missing. The text is good although a few errors occur such as the Englishman William Withering, who was partly medically educated in Edinburgh and learnt to play the bagpipes, being called a Scot.

The work is well referenced and also includes charts of important topics, (e.g. Eau de Cologne, Theriac, French and German discoverers of alkaloids) or Biographies (e.g. Paracelsus, Samuel Hahnemann, Gregory Pincus, James Black). It can be recommended as an excellent overview and foundation for further study, provided one can understand German. There are no English summaries.

W.E.Court.



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# Pharmacy and Education, 1841-1899.

**Dr M.P.Earles.**

The Pharmacy Act of 1868 required that a person who wished to practise as a Chemist & Druggist and become a seller of poisons must pass a qualifying examination. In the words of the Act, the examination would "declare...sufficient Evidence of his Skill and Competency to conduct the Business of a Chemist and Druggist, [and] be registered as a Chemist and Druggist under this Act."

At this time examinations were assuming a greater importance, reaching into area where appointment was hitherto a matter of privilege. In 1853 Macaulay supported the idea of competitive examinations for the Indian Civil Service, and in 1855 a Civil Service Commission was appointed to make provision for examinations for the Home Civil Service. The Royal Society of Arts established examinations in a range of subjects as did the Government Science and Art Department based at South Kensington.

Examinations in some circumstances were detrimental to education. In 1858 the Newcastle Commission surveyed elementary schools in Great Britain, and recommended "a searching examination...of every child in every school to which grants are paid." School grants were related to the examination results, and teachers, many of whom were poorly qualified, resorted to the cultivation of learning by rote as a means to get their pupils through the tests.[1] The emphasis placed upon the qualifying examination in pharmacy had a similar malevolent effect upon pharmaceutical education.

In 1891 a pamphlet was addressed to members of Parliament considering a Bill to improve pharmaceutical education. (*vide infra.*) It was from the proprietor of a private school of pharmacy and included the following statement: "In the name of reason, what can it matter to the examiners or to the public, where or how a candidate obtained his knowledge? Is he qualified, *that* is the all-important question."[2] The results of the qualifying examination itself give an indication of the consequences of this cavalier attitude towards a controlled and systematic course of instruction.

The Minor Examination of the Pharmaceutical Society, the qualifying examination for Chemist & Druggist, was held twice a year in two centres, London and Edinburgh. In the year 1899 the fail rate in London was over 70%, in Edinburgh 63%; for the five year period to 1899, the fail rate for the total number of candidates in London and Edinburgh averaged out at 67%.

These exceptionally high rates of failure were not new having been a feature of the qualifying examination since it was introduced in 1868. The questions to be asked are: what was the cause of the problem, and what were the impediments to solving it ?

The founders of the Pharmaceutical Society under the leadership of Jacob Bell believed that a uniform system of education was essential to raise the status of pharmacy and promote the advancement of science. They had before them the examples of France, Germany and other European countries where there were schools conducting courses in the science and technology of pharmacy.

In the 1840s there were formidable obstacles in establishing a country-wide system of pharmaceutical education in Britain. There was no national system of technical or scientific education, and even in thre major cities and towns there were few resources on which embryo pharmacists might draw.[3] Furthermore the British chemist & druggists regarded themselves as tradesmen, firmly believing in the principle of Free Trade and were reluctant to accept compulsory education, examination and registration as prerequisites to carrying on a business.

The founders of the Society devised a system of education which was voluntary but which Jacob Bell hoped would become compulsory through a Pharmacy Act. There was to be a preliminary examination before indenture as an apprentice. The subjects to be studied by the apprentice were pharmacy, prescription reading, the pharmacopoeia, chemistry, botany and materia medica. Success in the Minor examination qualified the candidate to be an assistant to a Chemist & Druggist, and eligible to become an Associate Member of the Society. For the assistant to go on to conduct a business on his own account and become a full Member of the Society, he was required to pass the advanced Major examination.

The problem was how the apprentice and assistant were to prepare for these examinations. Bell was aware of the difficulties they would face, particularly those working in small towns and rural areas. He wrote:"Lectures are not absolutely necessary to the student in pharmacy. We have occasionally met with young men who have been educated in the country...who have,by their own industry, and by availing themselves of instruction and opportunities of improvement afforded by their employers, attained...a degree of proficiency which would have enabled them to pass with ease the examinations to which we are alluding."

Although he observed that lectures are not absolutely necessary, Bell recognised that without them the majority of apprentices would experience considerable difficulties. He continued: "... it cannot be denied ... that lectures greatly facilitate the acquirement of information - that they lessen the labour of the student by directing his researches into the right channels and giving him a methodical plan of study."[4]

To furnish the means of proper instruction and to put its scheme for education into operation, the Society opened a School of Pharmacy in Bloomsbury in 1842. The calibre of the men selected to teach in the school and the introduction of a chemistry teaching laboratory, based on



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that of Justus von Liebig at Giessen, made the school an institution in advance of its time. It was an admirable model, but to repeat in the provinces required finance which was almost non-existent and local support which experience showed was very limited.

'Schools' of pharmacy, either in the form of courses associated with a local Mechanics Institute, or medical school, or by a series of lectures in an hired room, opened up in the larger centres but most failed within a short time. In 1844 the London school was nominated a 'national school' and optimistically described as intended to serve the needs of the whole country.

In spite of the failure to establish a country-wide system for providing pharmaceutical education, Jacob Bell went ahead with his parliamentary Bill which included provisions to make qualifying examinations obligatory. He believed that if it became law, "there is every reason to believe that ample means of instruction would be called into existence."[5] In the event the Pharmacy Act of 1852 regulated the qualifications for Pharmaceutical Chemists, but there was no support for compulsory education and examination, and therefore no new incentive to establish "ample means of instruction."

Within five years of the passing of the 1852 Act there was a serious threat to Bell's ambitions for pharmaceutical training. A series of fatal accidents and the notorious trial of William Palmer for murder by strychnine poisoning forced the Government of the day to seek legislation to restrict the sale of poisons to a species of qualified person. It was proposed that vendors of poisons should hold a licence which would be granted by a Government appointed Board of Examiners. Bell feared that the licence to sell poisons would be regarded as a qualification to practise pharmacy, thus removing the incentive to study for the more broadly based Society examinations. As a result, the Pharmaceutical Society was forced to oppose the series of Bills to regulate the sale of poisons, all of which had considerable public support.

In reality there was very little incentive to take up the education and training which Bell had sought to protect by his much critised opposition to the Poisons Bill. This was because the Society's examinations were voluntary and there were no substantial arrangements for structured courses of study.

The Pharmacy Act of 1868, which finally introduced compulsory examination, was in effect the long delayed sale of poisons legislation. The Pharmaceutical Society was given the responsibility for devising and conducting the Minor Examination which the Act deciared to be the qualifying examination for registration as a Chemist & Druggist. Professor Attfield FRS, who taught in the School of Pharmacy, was one of the critics of the Act. He pointed out that compulsory examination by itself created a demand, not for true education but for ephemeral information, knowledge held in the mind long enough for the candidaate to face the ordeal by examiners.[6] Like Jacob Bell before him, Attfield was stating an obvious objective with regards to education but doing so in a situation still lacking the means to bring it about country-wide.

There had been some improvement in the facilities for technical education since the Great Exhibition of 1851 which had emphasised the importance of science and technology to manufacture and trade. In 1869 there were classes in science, mostly evening classes, in 232 towns of England and Wales but only a few offered both chemistry and botany, the two basic sciences of pharmacy.[7] Some pharmacy associations were able to use local facilities to set up their own classes for pharmacy. Elsewhere apprentices who wished to qualify under the 1868 Act had to make their own arrangements, for example in Leicester where assistants and apprentices formed an association for the purpose of "facilitating study, and having papers read at meetings to be held weekly."[8]

The problem of providing pharmaceutical education in the provinces was widely discussed and various schemes were proposed. All that happened, however, was that the Pharmaceutical Society made small discretionary grants to pharmaceutical associations to organise courses of lectures.[9] It was rich ground for the entrepreneur and very soon the proprietary schools of pharmacy appeared. These schools brought about an improvement in the availability of course of study but their existence depended upon the success of their students and the number of passes in the Minor.

Apprentices living some distance from cities and larger towns who were unable to afford to go away to study were severely disadvantaged. For them, it was either self-help or the 'cram' school, the bottom line in schooling. One 'crammer' who operated a postal system advertised, "the students time will be principally employed in examination in which the questions are such as he may reasonably expect afterwards."[10] The Pharmacy Act of 1868 offered no safeguard against superficial forms of training, and in the ten years following the Act the Pharmaceutical Society appears to have had neither the will nor the meanas to resolve the problem. In 1881, however, unvarying rates of failure at the examination forced the Council to take a closer look at the problem and a committee was formed to consider the relation to each other of pharmaceutical education and pharmaceutical examination.

The Committee studied the examination statistics and found that the failures in the science subjects (chemistry, botany and materia medica) were twice those in the practice subjects (pharmacy, dispensing and prescription reading). They concluded that there was a want of a legitimate relationship between pharmaceutical education and the



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examination, and identified a generally prevailing intention to make as little knowledge as possible suffice to carry the candidate through the examination. It was evident to the Committee that the examination itself was regarded by many as the chief purpose of study. The Committee made three recommendations.

1. That the preliminary examination must be taken before the commencement of the apprenticeship to ensure that the pupil was qualified to undertake studies in science subjects. This was the recommendation of the founders of the Society but it had not been enforced.
2. That the candidate for the Minor Examination produce a certificate of attendance at a couse of lectures in the science subjects and a course of instruction in practical chemistry.
3. That the Minor Examination be divided into two parts; the practical and the scientific.[11]

Faced with these findings the Council of the Pharmaceutical Society sought to solve it through Parliament, assuming that if a systematic course of instruction became a legal requirement then the means of proper instruction for all candidates would come into existence. The Council was engaged in drafting a Pharmacy Amendment Bill to deal with problems created by the rapidly developing pharmacy companies and it was decided to add clauses to divide the Minor Examination in two parts and to require evidence of practical experience and tests of knowledge.[12] The Society however lost the case it brought against a company for contravention of the 1868 Act, and a Bill, part of which sought to overturn a recent decision by the Law Lords, having but little chance of success was dropped.

In 1885 the Council attempted to solve the education problem by means of new bye-laws to modify the examination and to require evidence of attendance at courses in scientific subjects. The Privy Council objected on the grounds that the proposal would go beyond the powers conferred on the Society. It was pointed out that the bye-laws permitted under the 1868 Act referred to the conduct of the examination, not to the means of preparing for it.

The Council in 1886 submitted to Parliament a Bill to amend the Pharmacy Acts of 1852 and 1868 and to confer powers enabling bye-laws to be drawn up to improve pharmaceutical education. The Bill was introduced to the House of Lords on Thursday, 17 March 1887 when reference was made to the prevalence of 'cramming', so that apprentices presented themselves for examination without devoting themselves to those skills essential to the safety of the public. The Bill was favourably received and was passed to the House of Commons.
It had its second reading in the Commons on 5 April at the unreasonable hour of two in the morning. One member observed that it would assimilate the law of England and Scotland with that which already existed in Ireland and worked well. Dr Clark, Member for Caithness, attacked the proposals on the grounds that apprentices in small towns and in poor neighbourhoods would not be able to qualify. He predicted that this result in the trade being limited to a small number of men who would make a monopoly of it. After observing this to be a threat to the principle of Free Trade, Clark went on to say that the Pharmaceutical Society, which was seeking new powers, was not a public body but a group of traders, its membership being a fraction of the total number of chemists & druggists in business. Mr Tanner, Member for Cork County, while not opposing the Bill itself, offered evidence of opposition from many of the chemists & druggists who would be affected by the Bill. The debate was deferred when the House adjourned. There followed a series of adjournments until August when the Bill quietly disappeared.[13]

In February 1888 the Bill was submitted in a revised form to deal with some practical and semantic problems. Again it was introduced into the Lords and passed but effectively killed by the addition of a clause to deal with the problem of company shops. The second reading in the House of Commons took place on 6 April 1888. There was a very short discussion before the House was counted out. Mr Kelly, Member for Camberwell, observed that the Bill, which he sarcastically referred to as an old friend, "proposes to place the unfortunate Chemists & Druggists, bound hand and foot, in the powers of an irresponsible body called the Pharmaceutical Society."[14]

This statement highlights the difficulty the Pharmaceutical Society was having at that time with regards to new legislation. Whilst the objective, to improve the education of the Chemist & Druggist was favourably received in some quarters, the chances of success suffered from hostile, but not unjustified, opinions concerning the Society which was not fully representative of the practitioners it sought to control. A majority of chemists & druggists had not joined the Society, and those who did so could only be Associates without voting rights or the right to hold office.

The failure of the Pharmaceutical Society to achieve its commitment to education in the basic sciences supplementing the training of the apprentices may be attributed, in part, to a dearth of courses in science and technology throughout Britain, and, in part, to chemists & druggists with opinions on a compulsory course of study ranging from indifference to fierce opposition. The chemists & druggists who inherited the practice of pharmacy from the medically orientated apothecaries, were a trading community opposed to any proposal threatening their independence and business. The Pharmaceutical Society was formed at a time of threatening medical reform which united the trade, but the enlightened 'professional'

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attitude involving education was not universally shared. There were many who on reading Jacob Bell's statement, "the foundation of education in our school is chemistry", would have replied, "sir, what makes a successful chemist & druggist is a properly supervised apprenticeship, nothing more and nothing less."

The divisions became obvious in the early 1860s during the discussions on the Pharmacy Bill. The Pharmaceutical Society was opposed by the United Society of Chemists and Druggists which represented the hitherto inchoate opposition to the Society. The draft prepared by the Pharmaceutical Society related qualification to competence in compounding prescriptions and associated skills. The United Socierty's proposals related qualification to the sale of poisons which was politically realistic given the concern of the Government and public over unrestricted sales. The Pharmaceutical Society was forced to make concessions. The Minor Examination, originally framed to qualify assistants, became the qualifying examination for registration as a Chemist & Druggist, and the Pharmacy Act was subtitled, "An Act to Regulate the Sale of Poisons."

At the time many must have believed that an apprenticeship supplemented by reading and attendance at some lectures (if available) would suffice to carry the candidate through the examination. The results, however, revealed that the even limited educational objectives laid down by the 1868 Act demanded a systematic course of study to ensure success in the examination. As shown above the Society was powerless to alter the bye-laws regarding preparation.

In 1890 there was a final attempt to solve the problem by a new Bill introducing revised educational requirements and a clause extending full membership of the Society to Associates-in-business. The time was favourable. The Technical Instructions Act of 1889, the result of a perceived weakness in British technical education and its possible effect on overseas trade, promised an increase in the number of local technical teaching institutions over the next decade.

In promoting the Bill the Pharmaceutical Society claimed to be approaching Parliament in the attitude of an educational body. Published articles and meetings in support of the Bill reveal that it was realised that success depended upon the unanimous, or near unanimous, support of the chemists & druggists, but as one speaker noted, "Perhaps there never was a trade so divided as ours."

The Bill had its first reading in the Commons on 20 March 1891 but it disappears from the record after 15 April when a petition in opposition was received.[15] This event, at the very time the Pharmaceutical Society was celebrating its jubilee of fifty years existence, confirms pharmaceutical education as one of its most serious failures. The effects were long term. Powers to make bye-laws to provide courses of study were finally conferred in the Pharmacy Act of 1908, but they were not put into practice until after the war of 1914-18.

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13. *Hansard's Parliamentary Debates*, 1887, vol.313, col.463-466.
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## Diary Dates

Foundation Lecture. Wednesday 11 March 1998.
To be held at The Royal Pharmaceutical Society, Lambeth. Dr Cook will be talking on the importance of Erasmus Darwin.
Tickets (gratis) must be obtained from Lambeth

BSHP Annual Conference. 24 to 26 April 1998.
Is to be held at Harrogate. It is planned that Dr. W.E.Court will give his postponed talk on *Rauwolfia*

There is to be a joint meeting in June 1998 with the Dudley and Stourbridge Branch when Charles Hajdamach will be talking on pharmaceutical glass.



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# Charles Elliot and Spilsbury's Antiscorbutic Drops[1]

**Professor Peter Isaac**

It is almost a truism in pharmaceutical history that the English book trade was of great importance for the distribution of proprietary medicines from at least the second half of the seventeenth century. This was true from no later than the mid-seventeenth century, when Lionel Lockyer's advertising booklets listed many book-trade outlets, until at least 1843, when the Pharmaceutical Society received its charter.[2]

In the eighteenth century it was common for the proprietors of the local newspapers to act as stockholders, using their newsmen to distribute the medicines with the papers. It is particularly interesting, therefore, to be able to follow the development by an Edinburgh bookseller and publisher of a Scottish market for an English nostrum towards the end of the century.[3]

## Charles Elliot, Edinburgh bookseller & publisher

Charles Elliot, who was born in 1748, purchased the stock of William Sands, whose daughter he married, and set up in business in Parliament Square, Edinburgh, in 1771.[4] Elliot was a substantial publisher, mainly of medical works (as, indeed, was John Murray I), - some forty-three works in all, starting with Robert Simson's *Elements of Conic Sections* in 1775. Elliot died in January 1790.

The earliest letter-book in the Murray Archives runs from May 1774 to September 1776, and includes eleven letters from Elliot to Francis Spilsbury, Chymist of 5 Mount Row, Westminster, proprietor of Spilsbury's Improved Antiscorbutic Drops. Spilsbury seems to have been approximately contemporary with Elliot. The records of church rates in the Guildhall shows an F. Spilsbury paying 5*s.* church rate and 6*s.* poor rate for premises in Gutter Lane in 1771. By the time we reach the Elliot correspondence Spilsbury was in Mount Row, Westminster, and by 1786 or earlier he had moved up to Soho Square. The *Derby Mercury* for 22 August 1793 reports "lately died at Hampstead Francis Spilsbury, proprietor of the excellent scorbutic drops".[5] The letter-books show the correspondence to have been very active until the end of 1779, decreasing thereafter to the end of 1784, when it appears to have come to an end.

## Spilsbury's drops

The method of preparation of Spilsbury's drops, which were patented in 1792,[6] was described in *The Lancet* of 5 October 1823 (almost fifty years after the time with which we are concerned). They consisted of two parts each of corrosive sublimate (mercuric chloride), gentian root and orange peel, together with one part each of antimony sulphide and red sanders (sandalwood). These materials were dissolved and extracted in a mixture of equal parts of rectified spirit and water. Unfortunately we are not told the dilution at which this toxic decoction was given to patients.[7] "These justly celebrated Drops... purify the blood, promote digestion, strengthen the nerves, and are remarkable for curing... the SCURVY, GOUT, RHEUMATISM, ULCERS, HUMOURS after the SMALLPOX, &c."[8]

## Elliot and Spilsbury

The first of the Elliot letters to Spilsbury, dated 9 May 1774, is clearly not the start of the correspondence. The Edinburgh bookseller acknowledges the receipt of a new advertisement "which has been asserted [*sic*] agreeable to your desire and will be continued", and requested a further supply of 4*s.* and 2*s.*6*d.* bottles, for which he was charged 2*s.*6*d.* & 1*s.*6*d.* "and 1 Bottle to the Dozen"; he reported that he had 6 of the larger bottle and 25 of the smaller. He promised "to Circulate them among the Country dealers, and do my outmost [*sic*] to promote the sale in General, the advertising is Expensive but hope when the Medicine is Established properly will make an ample amends". He goes on to urge careful packing of the bottles; by "sea is the Easiest Carriage". He still has plenty of the Medicine Chests remaining, as he has of "the Books"[9] - Spilsbury's *A Treatise on the Cause and Method of Curing the Gout, Scurvy, Rheumatism, Leprosy, and Other Complaints Arising from the Impurities of the Blood*, which ran through several editions. Spilsbury had proposed to send his drops to Glasgow and to advertise there; the Edinburgh publisher suggests that he cannot do better than the bookseller James Duncan "a man of Credit and honour, & dare say he will give you Satisfaction in his Deallings" [*sic*].[10]

As we shall see, Elliot handled other medicines. In his next letter[11] he appears to be answering a suggestion from Spilsbury that he should also sell a medicine for coughs and colds, and says "I can say little, it not being in my power to Judge of a Medicine I am unacquainted - but if you chuse to send a small Quantity of it, if it is saleable for a Trial". He then asks for more of the Drops.

## Scottish cures

In the same letter Elliot discusses the testimonials of cures used in the advertisements, emphasizing that, to attract Scots patients, several such cures must be Scottish; reports of English cures are less effective. Evidently he had made free gifts of bottles of the Drops to two poor patients, in the hope of obtaining local testimonials.

> "(Both Women) who got the former" [small bottles of drops] "was in a very bad situation, & is Now some what better, the other is in the Country & have not heard yet of the Effect, but if I am so fortunate as get a cure in or nigh this place, it will be the first thing that will make the Medicine General in this Country which I am hopeful of."[11]

On 27 December 1774 he reports the first of these cures.



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"I have got one poor patient perfectly cured, and have advertised the Cure which has had more effect than all the English cures, am in hope of getting another soon, the patient being much better."[12]

Elliot reports the second cure on 2 May 1775, and says that it has been advertised several times. He goes on:

"I received also an Adv[ts] [from Spilsbury] but can assure you my Own Adv[ts] being on the Spott have more Effect than these from your place."[13]

A few days later he writes:

"I am in hopes of getting another which has cost me a great deal of gratis Drops the person has been useing them since from 7 to 8 months I have been promised from day to day a Certificate."[14]

The outcome of these efforts may be seen in a four-page advertisement for the Drops, by then in 4*s.* and 7*s.* bottles, at the end of the *Edinburgh Magazine & Review* for July 1776.[15] In all there are a dozen 'cures' reported, of which the first three are Scottish. The first, signed by the Minister of Cleugh (twenty-four miles west of Edinburgh), resulted from the bookseller having given several bottles to the wife of a poor ploughman in that town; the second is attested not only by two elders of the College Kirk but also by two Edinburgh surgeons.

That the advertisement is directed to Scottish readers is shown by the short list of retailers listed towards its end; as well as Elliot, these include A. Thomson of Aberdeen, Mr Laurie of Tweedmouth, E. Wilson and Messrs Wylie of Dumfries, and P. Tait of Glasgow.

His search for Scottish testimonials demonstrates Elliot's active concern for the success of the Drops, as does his occasional discussion of the most appropriate prices for the bottles. Both Elliot and Spilsbury wished to increase the range of the Scottish retailing, and on 14 August 1775 the Edinburgh publisher suggests "I cou'd recommend you to very good men in Dumfries either M[r] Ebn. Wilson or W[m] Boyde the former is of longest standing".

### Advertising the Drops

In common with many other proprietors of nostrums, Spilsbury wrote several treatises to promote his medicine. One of these was *A Treatise on the Cause and Method of Curing the Gout, Scurvy, Rheumatism, Leprosy &c*, already mentioned. Its third edition (octavo, "price 3*s.*6*d.* sewed") was puffed at the end of the four-page advertisement, and seems to have been directed to "respectable members of the faculty", and presumably to others who took an informed interest in "many curious and useful observations on medicines in general, and of Mercury and Bark in particular, as well as the alarming symptoms after the small-pox"

Elliot could write very acerbically, but I can hear in my imagination a slightly dismissive tone when he mentions the treatise ('Book'). It is interesting to note that Francis Jollie, printer, bookseller and publisher of Carlisle, advertising Spilsbury's Drops "in the 5 shilling bottle, duty included" in the *Cumberland Pacquet* for 10 May 1786 offered to lend copies of the treatise to encourage customers to buy.[16]

Charles Elliot, on the other hand, relied for publicity principally on the advertisements which he inserted in local papers. In his letter of 13 February 1778 the bookseller tells Spilsbury that he has advertised thrice each in the *Edinburgh Evening Courant*, in the *Mercury or Northern Reformer* and in the *Edinburgh Advertiser*, and twice in the *Edinburgh Weekly Magazine or Amusement*.[17] In several other letters Elliot refers to the cost of the advertisements. We have already noticed the four-page insert in the *Edinburgh Magazine and Review* of July 1776; this was an octavo publication, and from its separate foliation it seems possible that Elliot himself arranged for the printing. The *Weekly Magazine* is also an octavo, but he had the advertisement placed on its cover.[18]

### Jenner's Powders and other Nostrums

So important to proprietors of medicines did the book trade seem that, when Edward Jenner developed his own stomach medicine, John Hunter, one of the leading surgeons and anatomists of his day, whose pupil Jenner had been, wrote to him urging him to let a bookseller have it for sale, and suggesting John Newbery & Co as the leading publisher and distributor of commercial medicines.[19]

This must have been early in Jenner's career, for we find Elliot writing to Alexander Dalmahoy, Chemist of Ludgate Hill, London, in May 1778 about Jenner's Powders.[20]

"I have made no hand of Jenner's Powders altho I have advertised several times, Mr Balfour Bookseller here got some from Mr Newbery some time before yours came to my hand a Quantity of his, which was advertised strongly and altho higher was [has?] at least hurt my sale, I presume the Publick look on ours as Spurious on acct. of the lowness of its price the Advert. you sent me was prodigiously long and of course Expensive could you not send me a neat short one I grudge the continuance on Acct of the length and Expense which is some what above the Extent of my sale..."

This is interesting as showing that Elliot, a substantial bookseller and publisher, engaged fairly generally in the sale of proprietary medicines, although it must have been a relatively minor source of income for him, and he apologizes to Spilsbury for late payment in several letters. The letter also hints at the struggle among the proprietors and manufacturers of these medicines - but this is not the place to discuss that matter.

### Spilsbury as a Customer of Elliot

So far this note has been concerned with Elliot as a customer of, and agent for, the London chemist, but - in a smaller way - Spilsbury was a 'customer' of the Edinburgh bookseller.

Spilsbury must have visited Edinburgh in the late months



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of 1779, and ordered books, possibly medical titles, from Elliot, as is clear from a letter of 4 December 1779, written for him by James Sutherland.[21]

> "According to promise I packed the books you purchased when here in a box directed for you on board the Diligence Capt Schaw who sailed two days ago in the Convoy and hope the Same will come safe."

On his way home to London the chemist called on the Newcastle printer and bookseller, Thomas Saint; in the same letter Elliot writes "Your favour from NCastle was safely rec[d] and agreeable thereto Sent 6 of your books" [the treatise on scurvy etc] "to Mr Saint of which I wrote him."

Much stranger is the commission that Spilsbury must have requested Elliot to undertake some years later. In his letter of 12 June 1783 Elliot writes:[22]

> "I rece[d] your favour of the 30 May after the most particular information I am at length able to inform upon what terms you can be furnished with a Diploma; you must produce a Certificate from two Creditable Physicians that you have been regularly Bred to Medicine. or I suppose to any particular branch I hope you'll be able to procure that & I will get you dignified with MD for about £14 odds which you or no man can get at Edin[r] without actual study at the place. If you procure the attestation you need not move out of London."

Reading between the lines it seems that the University of Edinburgh, at that time Scotland's youngest university, would not be party to selling its qualifications in this way,[23] but the University of St Andrews, Scotland's oldest, was prepared to do so, as were King's and Marischal Colleges in Aberdeen. Marischal College granted MD degrees after 1700, with the appointment of a Professor of Medicine, and the first such degree recorded was to Richard Stoughton in 1713; he paid £2 6*s*.8*d*. for the diploma.[24] There is no record of the award of MD to Spilsbury in the 1780s by Marischal College,[25] nor by King's.[26] Dr Iain Beavan, Associate Curator in the Department of Special Collections & Archives of Aberdeen University Library, has also scanned some of the original minute books, in case Spilsbury had applied and been rejected, but found no trace.[27] I have been unable to find that Spilsbury ever received this dignity.


## Acknowledgements

I am most grateful to Dr Warren McDougall for drawing my attention to the Elliot archives, with the bookseller's connexion with the London chemist, and to Mrs Virginia Murray, archivist of John Murray (Publishers) Ltd, for access to these archives and for allowing me to quote from them. I am also very grateful to Dr Anne Hargreaves and Dr Iain Beavan for much assistance.


## Notes and References

1. This is a shortened version of a paper presented to the Fifteenth Seminar on the British Book Trade, held in Canterbury 15-17 July 1997, to be published in *The Reach of Print* (Winchester: St Paul's Bibliographies, in press).
2. *An Advertisement, Concerning those most Excellent Pills called* Pilulae Radiis Solis Extractae. *Being An Universal Medicine.* For an analysis of book-trade outlets see A. S. Hargreaves, 'Some later seventeenth-century book-trade activities', *Quadrat*, 6 (xxx 1997), 1-x.
3. I am grateful to Dr Warren McDougall for drawing my attention to the Elliot letter-books and ledgers in the Archives of John Murray (Publishers) Ltd, and, yet once again, to Mrs Virginia Murray, the firm's Archivist, for allowing me to work on, and to quote from, them. John Murray II, Byron's publisher, married Charles Elliot's daughter Anne on 6 March 1807; probably she brought these records to Murray. The Elliot papers are being microfilmed and indexed by Dr McDougall.
4. See the Scottish Book Trade Index, compiled by John Morris of the National Library of Scotland. Additional information from Dr Warren McDougall.
5. I am grateful to Dr Juanita Burnby for much of this information about Spilsbury.
6. A C Wootton, *Chronicles of Pharmacy* (London, 1910), vol 2, 166.
7. *The Lancet*, 5 October 1823, p 30. I am grateful to Dr Alec Campbell for this information
8. Opening paragraph of the advertisement described in note 17.
9. Murray Archives, Elliot letter-book 1 (May 1774 to Sept 1776), folio 2.
10. Murray Archives, Elliot letter-book 1, folio 55. The advertisement in the *Edinburgh Magazine*, mentioned below, suggests that Duncan did not take this up
11. Murray Archives, Elliot letter-book 1, folio 80. The letter is undated, but falls between letters dated 20 and 22 September 1774.
12. Murray Archives, Elliot letter-book 1, folio 121.
13. Murray Archives, Elliot letter-book 1, folio 183.
14. Murray Archives, Elliot letter-book 1, folio 188, the letter is dated 13 May 1775.
15. I am grateful to Dr William Zachs for sending me a photocopy of this fascinating advertisement. It is a separate four-page insert at the end of the copy of the July issue of the *Edinburgh Magazine* in Edinburgh City Library, the copy of this magazine in the National Library of Scotland does not have the advertisement (information from Dr Brian Hillyard).
16. I am grateful to Barry McKay for this information.
17. Murray Archives, Elliot letter-book 3 (Sept 1778 to Dec 1779), folio 255.
18. Murray Archives, Elliot letter-book 1, folio 187.
19. F. H. Rawlings, 'Old proprietary medicines', *Pharmaceutical Historian, 26*, (March 1996), 7.
20. Murray Archives, Elliot letter-book 2 (Sept 1776 to Aug 1778), folio 466. The letter is immediately below an account dated 15 May 1778. Alexander Dalmahoy was a member of the London Apothecaries' Company, and on its Livery in 1779 and 1780, but was dead by 1783. His firm, after many amalgamations, became part of British Drug Houses, which, in due course, was taken over by Glaxo. (Information from Dr Juanita Burnby.)
21. Murray Archives, Elliot letter-book 2, folio 592.
22. Murray Archives, Elliot letter-book 6, folio 122.
23. John D Comrie, *Hist of Scottish Medicine*, 2nd edn. (Lond[n], 1932), 300-1.
24. Peter John Anderson, *Fasti Academiae Mariscallanae Aberdonensis* (Aberdeen, Spalding Club, 1898), vol 2, 111.
25. Anderson, *Fasti*, vol 2, 128-32.
26. Peter John Anderson, *Officers and Graduates of University & King's College* (Aberdeen: Spalding Club, 1893), 136-7.
27. I am grateful to Dr Beavan for this information and for xerox copies of portions of the relevant publications. The grant of Scottish medical qualifications makes a fascinating story, which cannot be pursued here. Reference may be made to William Stephenson, 'Four centuries of medicine in Aberdeen' in P. J. Anderson [ed], *Studies in the History and Development of the University of Aberdeen* (Aberdeen, 1906), 303-18; and Dorothy B Johnston, 'All honourable men? The award of irregular degrees in King's College and Marischel College in the eighteenth century', in Jennifer J Carter & Joan H Pittock [ed], *Aberdeen and the Enlightenment* (Aberdeen, 1987), 136-44, see also Comrie, *Scottish Medicine*, 387 (for Aberdeen) & 574-5 (for St Andrews).



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# English Apothecaries and Probate Inventories:

## Their use in Pharmaceutical History.

**Dr. J. Burnby**

According to a statute of 1529 (21 Henry VIII c.5) an inventory of the goods and chattels of a deceased person had to be exhibited at the time when probate of his or her will was granted, or when letters of administration were issued should that person have died intestate. The obligation to produce an inventory was in the form of a bond, half in Latin and half in English. The appraisers of the inventory had to be honest and skilful and when occupational equipment was included, at least one of them of them was a member of the same or closely allied craft or trade, frequently a relative as it was common for certain trades to run in a family. They were under oath and usually worked conscientiously so that we gain a good idea of the deceased's standard of living.[1]

Probate inventories were normally taken within a few days or a week or so after the testator's death. If delays did occur, then the inventory is often found to be incomplete, for example, a certain bequest in the will is missing. This does not necessarily mean that a theft has taken place, but rather that the testator has handed over the bequest personally after making his will. Strictly speaking this was an infringement of the law but would not have led to litigation.

As David Hey has written, "No other class of records provides such a rich vein of information on farming systems, old crafts and industries, household arrangements, furniture, utensils and the provision of credit in the form of bills, bonds and mortgages."[2] There are however certain limitations to the use of inventories. Some effects did not have to be listed, for example, fish, conies, deer or pigeon found in pond, warren, park or dovehouse, nor do dogs and cats figure. Horses and cattle are however always individually listed, even on occasion, touchingly giving us the animal's name. Sheep and pigs are usually given in less detail.

The personal estate of the testator did not include the value of buildings and land, whether freehold or copyhold, as they were classed as real estate, and even things affixed to the tenement, such as a weather-vane were not put in the inventory. Although real estate was not included, leases which did not terminate with the death of the dead person, were.

Money which had been lent or had been invested in bonds appears in inventories, as did 'book debts' which are often described as 'sperate' or 'desperate', and even 'not entirely desperate'. Older men who had been successful in business often had considerable sums 'out upon interest'. Bonds were the most usual means of lending money but mortgages became increasingly common, and courts baron can show, only too often, how frequently the lender foreclosed.

Probate inventories are not entirely reliable indicators of the number of rooms in houses as there was no obligation to mention rooms with no moveable objects. Furthermore, any goods that a husband enjoyed through his wife, for example, beds, linen or poultry, were also excluded. There were a number of other exceptions too, such as the widow's apparell and her jewels, nor were her bed and coffer included, in practice, usually the furniture of the room in which she subsequently lived.

It is sometimes impossible to decide from an inventory whether a person was in fact poor or was living comfortably in his retirement having already passed most of his estate to his children. He may well be living in a small portion of one of his childrens' houses much of his estate having already been dispersed by means of marriage portions.

These provisos being borne in mind, a very fair knowledge of a man's position in life can be obtained from inventories.

### Houses and household furnishings.

The majority of inventories are of the personal estates of yeomen, tradesmen and craftsmen whose homes are of the order of two or three rooms rising to five or six, but there are inventories of large manor houses, such as that of Rufford Hall, Lancashire in 1620 with its 24 bedrooms, a dining hall, two studies, gallery, kitchen, larder, buttery etc. It is quite possible to make reasonably accurate reconstruction of the lay-out of a house, as the rooms are usually specified in which the furniture and goods are found.

Amongst the apothecaries of the period there was as might be expected a fair amount of variation. Amos Sealy of Bristol's inventory (1717)[3] gives no indication of how many rooms he had at his disposal and it may well be that he was living with his son; a view that is confirmed in that the inventory came to only £7. It was not however always a question of poverty or old age and retirement, as there is equally no indication in the inventory of Thomas Pigott of Warrington, Lancashire,even though the inventory amounted in value to £335.[4] At one end of the scale were apothecaries like Andrew Poole of Grantham, Lincolnshire (1677) who had a living room, (which could have a number of names, such as 'the hall', or in the north of England, 'the house' or 'house-place') the shop, two upper rooms, (always called 'chambers'), a garret, and a brewhouse, and at the other, John Fothergill of Sudbury, Suffolk, (1668) who had ten rooms inclusive of a study and the shop but exclusive of a buttery, cellar, gallery and a barn, or there was Thomas Coleman of Market Harborough, Leicestershire, who obviously had a large house, as besides a parlour, two garrets, kitchen etc., he had for upper rooms, the new, the yellow, the green, Talbot, Gilberts, the hall and great chambers, as well as a cellar, brewing house and a 'Strong Water House'.[5] Edward Wood (I) of



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Chesterfield, Derbyshire, (1701) had no less than eleven rooms, not counting the shop, the cellars, pantry, stillhouse and barn with stable.[6]

The most usual sized house was probably like that of John Parker's of Lichfield who had a living room and a parlour, a kitchen, buttery, brewhouse and cellar, with three upper rooms, and of course the shop; there was also a barn and stable, most apothecaries having a horse to visit their patients.[7]

Edward Stevens of Henley-upon-Thames, Oxfordshire, (1663) had not only a 'best chamber' but three others as well, one of which was called 'the mens chamber' from which we guess that he employed a number of workmen, although there is no indication what the work was.[8] The wealthy Ralph Clarke of Grantham (1631) like John Fothergill had a gallery, and somewhat mysteriously, gallery chambers where both pit coal and sea coal were stored, and part of the house seems to have been three storeyed. [9]

A comparitive study of sixteenth and seventeenth century houses can indicate changes in design, size and shape of both large and small houses. The importance of beds in the homes during these centuries is particularly noticeable. Nearly every room, even parlours, held one or more beds. In the wealthier homes, the furnishings of testers, valence and curtains are carefully noted, particularly the cloth of which they are made. At the other end of the scale, there are mere mattresses filled with nothing more comfortable than straw. Bed linen in all but the poorest homes was plentiful

As the years proceed the beds in the parlour disappear. dining rooms begin to appear in place of large open halls. At the same time there are new types of furniture; stools were replaced by chairs, and by the end of the seventeenth century, the joined chair with cushioned seats or covered with leather gave way to rush or cane chairs, and long tables disappeared in favour of the oval gate-legged type.[10]

As might be expected kitchen utensils are often described in considerable detail from which we are able to obtain a good idea of the methods employed in cooking. There are many mentions of spits, salting and pickling troughs and tubs, and of course to the bakehouse with its oven(s). the brewhouse with its array of vats, and dairies or milk houses.

Silver in the form of salts or spoons is only to be found in the homes of the gentry, the richer yeomen and the budding professional men, it being very much a status symbol. Andrew Poole (1677) was the, no doubt, proud possessor of four silver cups and six silver spoons (valued at £5 15s.0d.), as would have been William Nutton of Spalding, Lincolnshire (1716) who had two snuff boxes and a pair of silver spurs and buckles.[11] The second of the Wood dynasty of Chesterfield, Edward I, (1701) after bequeathing six "silver wrought spoons markt with the letters E:A:W, one silver porringer, one silver wrought caudle cup with two eares, two silver ... Apostle spoones, one silver wine cup and three gold rings which I commonly weare" to his son Nathaniel, and two or three other silver items to his grandchildren, still had "A Hundred Thirty Five Ounces of Silver Plate at 5s. per Ounce" in his inventory which came to £33 15s.[12]

A method of investing surplus cash was to purchase large amounts of plate or pewter, as did John Kaye of Huddersfield, Yorkshire,(1686) and Richard Kerwood of Bristol (1692).[13] Thomas Poole, another Grantham apothecary (1708) had plate valued at £25,and that of Philip Barnett of St. Martin's-in-the-Fields, London, was no less than £128 13s.11d. "In money in plate".[14] In fact the plate was the bulk of his estate which totalled £262 including £98 of "desperate debts", that is debts which his appraisers believed would not be recovered without resorting to the law.

The degree of luxury which a family had attained can be determined by listing the number of clocks or looking-glasses, and its cultural level by the number of books. maps and musical instruments. Thomas Pigott of Warrington had one looking-glass, but Richard Kerwood of Bristol, Stephen Garner of Nottingham and Andrew Poole of Grantham had two each.[15] Some of the apothecaries liked to indulge themselves in framed pictures. Richard Gooden of Ruthin, North Wales.(1677) having as many as nineteen. John Fothergill (1668) invested in maps of which he had four, whilst William Bossley of Bakewell, Derbyshire, (1714) had listed, "In the little Closset by ye house [that is the living room] his library and severall Mathematicall instrum[en]ts", all valued at £20, a very considerable sum of money.[16]

Other signs of prosperity were "peices" of tapestry and "embroderd" chairs. The previously mentioned Ralph Clarke had "a coverlett of Tapestry worke and one longe carpett of Tapestry" valued at £10, besides a "paire of virginalls", a lute and an "old Bandora".

Books frequently pertained to their profession as apothecaries. John White of Basingstoke (1636) for example having a herbal and three dispensatories, but these usually amounted to only about £2.[17] A Bible not unexpectedly often figures. Richard Morgan of Chepstow, besides an old paper map and fifteen old pictures, had sixteen old books, none of which one suspects had been looked at for years, but John Fothergill had a study in which was "his Library of Books" valued at £10.[18]

Rosemary Milward has made a careful study in her paper, "Books and Booksellers in late 17th. century Chesterfield", which is based on the inventories of two local booksellers and the wills and inventories of local people in which books or libraries are mentioned and included a few apothecaries.[19] Out of about six hundred volumes, the appraisers name and price only fifty, from which we learn that religious books predominated but that medical ones were found in the second position. John Ashe an



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apothecary who died in 1707 had books which were valued at thirty shillings, and it is probable that he had bought them in the town.

Not what one would allocate to the luxury catalogue, but certainly unusual in England at that time, were firearms, though it should be remembered that many of these inventories were made not so many years after the Civil War. John Wilder of Reading, Berkshire, (1693) with an inventory totalling £562 12s. had a carbine, two pistols and a birding piece, and Andrew Poole a pistol, two holsters and a sword, whilst John Fothergill's assessors had contented themselves with merely writing "Gunns and Swords - £1 10s.0d."[20] Thomas Baskerville of Exeter, Devonshire,(1596) had possibly the largest armoury of all with "a muskett, a calyver [hand gun] with furnytur, a fowling peece, a rapier, a bowe and quyver of arrowes [and] a dagge[r]" and armour with two headpieces. As Professor Trease has pointed out Baskerville would have been only forty at the time of the Armada when all men between sixteen and sixty were liable for military service.[21]

## Farming, Industry and the Professions.

As is to be expected in an agriculturally based land, as nearly all England and Wales were in the seventeenth and much of the eighteenth centuries, agricultural tools and implements are minutely described, ploughs, horse collars, carts, wains of many types and their component parts such as wheels, axeltrees and spokes. Reading through lists of inventories, it becomes apparent that some 70% of all people, be they of town or country, (with the notable exception of London and the larger towns of Bristol, Norwich and York), were concerned with agriculture to some degree, even if it were only one cow, a pig and a load of oats or hay. Few, whether gentry or smith, had no contact with the surrounding countryside, and apothecaries were not excepted.

Many apothecaries' inventories show that they were involved in farming. It is unlikely that they themselves did any manual labour, but rather employed labourers or even their apprentices.[22] John Kaye (1677), possessed one cow and a grey "nag", whilst the wealthy Richard Wood of Chesterfield (1715) had two cows, two horses, one mare, one colt and a filly, husbandry gear, wheat, oats and manure.[23] Richard Gooden (1677) was farming in a not inconsiderable way with seven score sheep, five bullocks for fattening, three calves, four draught bullocks, three cows, two bullocks, one heifer and three horses. He had two ploughs, a large quantity of rye, less barley and a little wheat.[24] At the other end of the scale, John Parker of Lichfield, (1655) merely had a pig.

J.J.Bagley has shown that farmers supplemented their incomes by spinning and weaving, by coal-mining, fishing, and using small forges to make articles such as nails or hinges. At the same time craftsmen eked out a living by small-holding, particularly tilers, thatchers and cutlers. It is being increasingly realised that dual occupations were more the norm than the exception during these centuries. It has been acknowledged for many years that the woollen weaver of west Yorkshire was also a hill farmer. In Derbyshire it is known that the lead miner was miner or farmer as the season of the year demanded, and David Hey has shown that the cutler of south Yorkshire was both metal-worker and husbandman.[25] The proof for such duality of occupation being most often found in the inventories.

Most apothecaries of any position brewed their own ale and beer, but others went further than this and were the owners of taverns and inns and sometimes breweries. Indeed, at times it is difficult to decide which occupation was the more important to him. William Clarke of Grantham in 1650 bought the famous *George Inn* (it was with this apothecary that Isaac Newton lived when he was attending the local grammar school), John Fage of Cambridge was also a vintner and occupied the *Rose Inn*.[26] This information however being real estate was not derived from inventories but from rating books. To try and obtain a rounded picture of any apothecary at this period, his will if ever made and still extant should also we read. It is from their wills that we learn that John Symcotts of Huntingdon had *The Crowne* there, as well as leasing *The Angel* in Paternoster Row, London, and Thomas Dickenson of Stafford who owned the *Starr Inn* in the Market Place.[27] The inventory of William Fuller of Hemel Hempstead, Hertfordshire, shows that he had £23 6s.8d. worth of casks of beer, wine and casks, but it is other documents that show he was the owner of *The Bell*.[28]

The use of occupational titles until recent years has been very inexact and little reliance should be placed on them. In London, a man described as a citizen and leatherseller turns out to be a printer who later becomes heavily involved in 'patent' medicine manufacture; a citizen and tallow chandler is a gardener or else an innkeeper, and a barber-surgeon is almost anything but a barber or a surgeon.[29] As Trease has pointed out it was not infrequent for apothecaries to be described as mercers, sometimes in a will as in the case of Ralph Clarke I, or even more likely on his trade tokens which were issued as small change, as for example Richard Barber of Gainsborough.[30]

If a man made money, especially if he did not have to bother himself any longer with the daily concerns of his profession or trade, then he was likely to term himself 'gentleman', as did Lewis Dickenson of Stafford, apothecary, when making his will in the late eighteenth century.[31] Many misinformed statements have been made as to whether a man were an apothecary, or a surgeon, or a physician, but inventories have proved that in the eighteenth century and probably most of the seventeenth apothecaries also practised as surgeons, and vice-versa.



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## The Wealth of the Apothecary.

The bulk of economic transactions, particularly in the country districts, during this period was settled in hard cash, mostly in silver coin. Until well into the eighteenth century, the provincial country bank was rare, but systems of credit were arising and mechanisms for borrowing and lending money were developing. Funds were lent by private traders and merchants with money beyond their immediate requirements, the more successful apothecaries amongst them. He might deal with the borrower directly, or deposit his surplus cash with a scrivenor or goldsmith who would re-lend it to a suitable borrower.

Richard Kerwood, the Bristol apothecary, had apparently lent "Mr Danyell Phillips" £12 by bond, and he had also a £70 mortgage "of a house in Ballance Streete in Bristoll of one John Tuggwell."[32] Then, as now, mortgaging property was a favourite method of raising much needed cash for trade or industrial expansion.

John Wilder of Reading had "Debts due on bond" to eleven named borrowers totalling nearly £300, and that figure was exceeded by Samuel Hancock of St. Clement Danes, London.(1731). Hancock had a grown-up son to whom he seems to have already handed over his business, as no drugs, instruments or a shop are listed. He was not however a poor man as he had four boxes of books, a gold ring and even a watch.[34] William Bossley lent money 'upon bond' or 'upon a note' to at least eight men who lived in the surrounding villages of Derbyshire.[35] When not itemised a favourite phrase was, as in the inventory of Andrew Poole, "Item: in debts and spetialtyes good and desparate - £260".[36]

It is also apparent, chiefly from their wills, that apothecaries had a keen interest in the property market, particularly in the bouyant area close to London. Examples in other areas can also be seen. In north Wales, Richard Gooden's inventory shows him, because the individual rents are given, to be the owner of at least sixteen cottages and houses. Other wealthy apothecaries are known to have had interests in or to have owned water mills as did the Clarkes, or a malthouse as did William Fox of Louth, or lead mines as did Richard Wood II (1715); in the latter's inventory was an added note, "some Lead that was omitted above - £7-0-0."[37]

Trease has proven that inventories are able to throw considerable light on the prosperity and solvency of the apothecary.[38] He relates that the inventory of Robert Blease of Chester, apothecary and alderman, who died in 1632 came to a total of £361, but that of Ralph Clarke who died a year earlier was even greater with a figure of £490. It is probable that both men were wholesalers and retailers, as in all likelihood was, Robert Clegg of Mansfield (1662) who besides a shop had two warehouses and 120 lbs. of tobacco at 10d. per lb. By contrast Thomas Blackman of Horncastle's inventory (1625) came to only £51 and that of William Evans (1630), who lived in Lincoln, to £76.

Forty years later, the contrasts were even greater. The inventory of John Inkersall of Boston, who was probably also concerned with the import of drugs, amounted to no less than £1,140, whilst that of Henry Mawe of Epworth was only £31. True a number may be as low as that of Francis Clipsham (1703) with a mere £7 or George Hodgkinson of Derby (1730) with a total of £19 3s., but it seems that the figures in the majority of the inventories ran between £100 and £350, as for example John Kaye (1686) with £189, John Denman of Bakewell, (father of the famous obstetrician), £188, Richard Beresford of Lincoln (1607), £295, Andrew Broome of Grantham (1677) £314, and Samuel Farmer of Chipping Norton, Oxfordshire (1682) with £285, and many more in the same band.[39] Farmer is of particular interest for the range of wares he sold. These included, "All the drugge wares Chests gallipotts glasses spice mortars scales weights ... w[hi]ch belong and appertaine to his Apothecaries trade amounting in all to the value of £95 13s.4d.," to which had to be added, "all the grocery wares haberdashers salters & potters ware in and about the house and shopp" at £65 6s.8d.[40]

In many, probably most cases, the stock and equipment in the shop accounted for a high proportion of the apothecary's wealth. The pharmaceutical goods of John Kaye, (exclusive of book debts) came to £94 out of a total of £189, whilst the "goods in the shopp" of Thomas Pigott were priced at £210 with book debts of £84, out of a total of £335.[41]

## The stock and equipment found in a pharmacy.

Where one has a detailed inventory of the shop, the stock is sometimes placed under headings, such as conserves, plasters, electuaries, waters, "oyles", syrups or unguents; this was the case with Richard Beresford of Lincoln (1607) and Thomas Matlis, a Norwich apothecary who died in 1663.[42]

Much can be determined concerning the equipment and the fittings that the apothecary used. Richard Morgan of Chepstow (1682) had a marble mortar, a brass pestle and mortar, a "great bell mettle morter" and a little pestle and mortar, an iron pestle and a wooden one, two shop chests, two cases of boxes, "a parcel of gallipotts, great and small", three pairs of scales, a desk and a wooden counter. He obviously had practised some surgery for he had a "playster box", an old "rasor", four old instruments and a pair of tooth drawers. Glyster pipes are frequently listed.[43] Morgan does not seem to have done any distillation but many apothecaries of the period were keen distillers. John Fothergill had three stills and "three old Limbecks with their potts", as did Samuel Farmer and Robert Clegg.[44] These were often found in the kitchen and not the shop or pharmacy, although in a few cases the apothecary had a "stilling room", as had Robert Baskerville (1596) where he kept two stills of lead, "4 glasse gallon bottels and 3 tyn botels", as well as an alembic.[45]



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John Lambert's pharmacy in Melton Mowbray, Leicestershire, was also well supplied with drugs and equipment, the inventory running to 178 separate items. These included "Ten Lancetts & Catheter" and, unusually, as an afterthought, "plants in the Garden" which makes one wonder if he had a small physic garden. Living plants are very rarely mentioned.[46]

The range of the drugs and the drugs themselves are of particular interest. Nux Vomica seeds are to be seen in the inventory of Baskerville and as Trease has noted, it is one of the earliest references in England, though known earlier in Germany. The use of drugs from the New World such as Guaiacum, Tobacco, Sassafrass, Winter's Bark, Cinchona and Sarsaparilla spread amazingly quickly when one considers the problems of transport and communication. Trease writes that Sassafrass was first used by the French on the recommendation of the Indians in the expedition of 1562-64, and yet Baskerville had 2½lbs. of it in 1596.[47]

Occasionally the inventories and wills show that the apothecary had more than one shop as was the case with Robert Harrison at Spilsby and Bolingbroke, Lincolnshire, and Edward Davies of Ludlow, Shropshire.[48]

## Thomas Needham of Chesterfield.

The contents of Thomas Needham's shop are unusually detailed and well worthwhile careful study.[49]

Chesterfield, Derbyshire, is a town in the north Midlands of England which had a population of perhaps 1,500 people at the time of Thomas Needham's death, this calculation being derived from the Hearth Tax Returns of 1664.[50] In the latter part of the seventeenth century Chesterfield was a flourishing market town supplying the needs of its inhabitants and the local gentry in the surrounding countryside. The richest tradesmen were those associated with the leather industry, the tanners, curriers and sadlers, but many apothecaries were doing well. Edward Wood, son of the apothecary Richard who had been the apprentice master of Thomas Needham, came to own not only a house with ten hearths (Hearth Tax of 1670) but another in the nearby village of Norton which had six hearths.

We learn from Needham's inventory that his house had six rooms, including a garret and a store-room, but excluding the shop. There were however only two hearths. Certainly his home was not large, consisting of the "house" or general living room and kitchen combined, a parlour, a chamber (ie. a bedroom) over the parlour, a garret, a "Chamber next the Strete", which held a loom, spinning wheel, wooden trestle and four firkins. His home was not luxurious but was well appointed with kitchen utensils, beds and bedding, and luxury goods such as two "seeing glasses" and two desks. He seems to have had a horse, as so many apothecaries did, because a hacking saddle and bridle are listed, as well as a pillion and pillion cloth.

Furthermore, it is known from other sources that he was a young man with a small child who had recently lost his wife.

His household goods together with Needham's purse and apparel were valued at £45 11s.2d., and the commodities in the shop at £120 8s.9d.

### A CATALOGUE OF THE COMODITYES IN AND BELONGINGE TO MR NEEDHAM[S] SHOP.

[Page 1 of shop inventory]

| | | li. | s. | d. |
|---|---|---|---|---|
| Cumin seeds | lb.19 att 8d [pence] | 0 | 12 | 8 |
| Cours Liquoris powder | lb.9ss att 7[d] | 0 | 5 | 6½ |
| Indeco | lb.vii att 4s[hillings] | 1 | 8 | 0 |
| Cassia Fistularis | lb.viiiss at 1s.6d. | 0 | 12 | 9 |
| Sem: Carui | lb.vss att 7d. | 0 | 3 | 1½ |
| Bitter Almonds | lb.5 att 9d. | 0 | 3 | 9 |
| Jordan Almonds | lb.viss att 1s.3d. | 0 | 8 | 1½ |
| Valentia Almonds | lb.13 ℥ xii att 11d. | 1 | 2 | 7 |
| Anyseeds | lb.xi ℥ xii att 9d. | 0 | 8 | 9 |
| Spanish Fennell seeds | lb.ii ℥ iiii att 13d. | 0 | 2 | 5 |
| English Fennell seeds | lb.ss | 0 | 0 | 3 |
| Coriander seeds | lb.iiiss att 7d. | 0 | 2 | 0½ |
| more Span.Fennell seeds | lb.iiss att 13d. | 0 | 2 | 8 |
| Rice | lb.xv ℥ iiii att 4d. | 0 | 5 | 1 |
| Juniper Berryes | lb.ii ℥ x att 1s. | 0 | 2 | 8 |
| French Barley | lb.vss att 5d. | 0 | 2 | 3 |
| Methridate | lb.ii ℥ 4 att 6s. | 0 | 13 | 6 |
| Venice turpentine | lb.ii ℥ iiii att 16d | 0 | 3 | 4½ |
| Flos Sulphuris | lb.i ℥ vi | 0 | 1 | 4 |
| Rhabarb | lb.i ℥ iii att 9s.6d. | 0 | 11 | 0 |
| Fine Aloes | lb.ii ℥ iii | 1 | 2 | 0 |
| Course Aloes | lb.ii ℥ ii | | 9 | 6 |
| Musk seeds | ℥ i | 0 | 0 | 4 |
| Mechoacan | lb.i ℥ iii | 0 | 7 | 3 |
| Euphorbeum | lb.ss | 0 | 1 | 4 |
| quinque gen. mirabolanon[um] | lb.5 | 0 | 14 | 0 |
| Senna | lb.iii ℥ i att 5s.8d. | 0 | 17 | 4 |
| Rad. Aristolochia | lb.5 | 0 | 5 | 10 |
| Rad. Asari | ℥ ii | 0 | 0 | 4 |
| Gentian | lb.ii att 1s.2d. | 0 | 2 | 4 |
| Sarsparilla | lb.iiss | 0 | 10 | 5 |
| Rad Rubiae tinctor. | lb.iii | 0 | 3 | 0 |
| Soldanella | ℥ xiii | 0 | 1 | 0 |
| Scordeum | ℥ xii | 0 | 1 | 0 |
| grana paradis | lb.viss | 0 | 5 | 9 |
| | | 12 | 2 | 11 |

[Page 2]

| | | | | |
|---|---|---|---|---|
| Turbith | lb.iiii | 1 | 6 | 8 |
| Shavings of Ivorye | lb.ii ℥ vii | 0 | 2 | 6 |
| Os de Corde Cervi | ℥ i | 0 | 0 | 4 |
| Sulphur viv[um]. | lb.ii ℥ xii | 0 | 5 | 0 |
| Gentian in Another place | lb.i | 0 | 1 | 2 |
| Lapis Hibern. | lb.iss | 0 | 1 | 6 |
| Alkanett | ℥ vii | 0 | 0 | 7 |
| Mastick wood | ℥ ii | 0 | 0 | 4 |
| Bistort Roots | ℥ 9 | 0 | 0 | 9 |
| Dictamn. cretens | ℥ ii | 0 | 0 | 6 |
| Cipress Roots | ℥ iiii | 0 | 0 | 6 |
| Calamint | lb.iss | 0 | 1 | 6 |



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|---|---|---|---|---|---|---|
| Black Hellebor | lb.i | | | 0 | 1 | 6 |
| White Hellebor | | ℥ xii | | 0 | 1 | 0 |
| Squinanth | | ℥ iss | | 0 | 0 | 2 |
| Assa Foetida | lb.ii | ℥ ii | | 0 | 5 | 4 |
| more Sulphur viv[um] | | ℥ xii | | 0 | 1 | 6 |
| Sem. Dauci | lb.ss | | | 0 | 0 | 6 |
| Lapis Calaminar. | lb.4 | ℥ ii | | 0 | 2 | 4 |
| pine Kernells | | ℥ vii | | 0 | 0 | 6 |
| Spunge | | ℥ iii | | 0 | 1 | 0 |
| Cipress Nutts | | ℥ iss | | 0 | 0 | 3 |
| Sem. Tanaceti | | ℥ vi | | 0 | 0 | 2 |
| Sericum Crude | | | ℥ vi | 0 | 0 | 4 |
| Myrtle Berryes | | ℥ ii | | 0 | 0 | 4 |
| Lapis Tutiae | lb.*i* | ℥ xii | | 0 | 2 | 0 |
| Benzoin | | ℥ xii | | 0 | 6 | 0 |
| Styrax | lb.i | | | 0 | 5 | 0 |
| Labdanum | lb.i | ℥ ii | | 0 | 2 | 8 |
| Jallop | | ℥ xii | | 0 | 4 | 0 |
| china Roots | | ℥ 5 | | 0 | 2 | 6 |
| Zedoarye | | ℥ iss | | 0 | 0 | 6 |
| Fungus Sambucinus | | ℥ ss | | 0 | 0 | 2 |
| carpo Balsam | | ℥ ii | | 0 | 2 | 0 |
| Lign. Aloes | | ℥ iii | | 0 | 0 | 9 |
| | | | | 4 | 1 | 10 |

[Page 3]

| | | | | | | |
|---|---|---|---|---|---|---|
| Anchovyes | lb.iii | | | 0 | 4 | 6 |
| Wash Balls | 5 dozen 3 balls | | | 0 | 3 | 9 |
| Argent. viv. | lb.ii | | | 0 | 7 | 6 |
| Glasses with distilled waters | | N.65 | | 1 | 10 | 0 |
| Diapenty | | ℥ xii | | 0 | 1 | 6 |
| Flors. Spice | lb.i | ℥ vi | | 0 | 1 | 6 |
| Theriaca Andromach. | | ℥ iiii | | 0 | 2 | 0 |
| Mercur. Dulcis | | ℥ i | | 0 | 1 | 6 |
| Mercur. vitae | | ℥ ii | | 0 | 4 | 6 |
| Extract Gentian | | | ℥ ii | 0 | 1 | 0 |
| Trochus De Mirrh | | | ℥ iii | 0 | 0 | 4 |
| Mercur. precipitate | | ℥ iiii | | 0 | 3 | 0 |
| Extract Rudii | | | ℥ vi | 0 | 2 | 6 |
| ol. nucis moschat p.expression | | ℥ 4 | | 0 | 1 | 4 |
| potts for pills w[i]th the pills in them | | Nro 12 | | 0 | 6 | 0 |
| Trochisc alb. Rhaz. | | ℥ ii | | 0 | 0 | 4 |
| cuppinge glasses nro.11 | | | | 0 | 3 | 8 |
| Turpetu[m] mineral | | | ℥ iii | 0 | 1 | 0 |
| Ol. nucis mosch chym. | | ℥ i | | 0 | 5 | 6 |
| Ol Anthos chym. | | ℥ iii | ℥ ii | 0 | 10 | 0 |
| Ol. Succin. | | ℥ iiii | | 0 | 6 | 0 |
| Ol. cerae | | ℥ ii | | 0 | 4 | 0 |
| Ol. Absynth. chym. | | | ℥ iiii | 0 | 1 | 6 |
| Ol. Anisi | | ℥ ii | | 0 | 3 | 0 |
| Ol. Origani | | | ℥ ii | 0 | 1 | 2 |
| Spir. Minth | | ℥ iii | | 0 | 3 | 0 |
| Spir. Lavendulae | | ℥ ii | | 0 | 0 | 6 |
| Ol. Vitrioli | | ℥ 4ss | | 0 | 1 | 0 |
| Ol. Guaici | | ℥ i | | 0 | 3 | 6 |
| Ol. Sulphur | | ℥ ss | | 0 | 2 | 0 |
| Ol. Juniperin | | | ℥ ii | 0 | 0 | 6 |
| Ol. Thymi | | ℥ i | | 0 | 4 | 0 |
| Ol. Gariophill[um] | | | ℥ iss | 0 | 1 | 0 |
| Ol. Rhodii | | | ℥ v | 0 | 2 | 6 |
| Gum Tragacanth. pulver. | | ℥ iii | | 0 | 1 | 0 |
| Species Diatrion Santalon | | ℥ ii | | 0 | 1 | 6 |
| pulvis passavanticus | | ℥ iiii | | 0 | 5 | 0 |
| | | | | 6 | 11 | 7 |

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| | | | | | | |
|---|---|---|---|---|---|---|
| Borax | | ℥ iiss | | 0 | 1 | 0 |
| Opopanax | | ℥ 8ss | | 0 | 2 | 0 |
| Gett [Jet] | | ℥ vii | | 0 | 0 | 7 |
| Gambugin[um] | | ℥ vi | | 0 | 3 | 0 |
| Crocus mettalor[um] | | ℥ viss | | 0 | 3 | 3 |
| Vitrum antimonial | | ℥ x | | 0 | 2 | 8 |
| Cremor Tartar | lb.ii | | | 0 | 7 | 0 |
| Antimon Crudu[m] | lb.i | ℥ ii | | 0 | 1 | 0 |
| Antimon Diaphoreticu[m] | | ℥ ii | ℥ iii | 0 | 4 | 6 |
| Acacia | | ℥ i | ℥ vi | 0 | 2 | 0 |
| Hypocistis | | ℥ i | | 0 | 1 | 6 |
| Crabs eyes | | | ℥ i | 0 | 0 | 1 |
| Jujubes & Sebestens | | - | | - | - | - |
| Sem. Carthami | lb.i | | | 0 | 1 | 4 |
| Sem. Amees | | ℥ ii | | 0 | 0 | 6 |
| Bombast seed | | ℥ ii | | 0 | 0 | 2 |
| Sem. nigella Roman | | ℥ ii | | 0 | 0 | 4 |
| Sumach | | ℥ iss | | 0 | 0 | 3 |
| Ginney pepper | | ℥ i | | 0 | 0 | 0 |
| Sem papaver. Alb. et nigri | | ℥ xii | | 0 | 1 | 0 |
| Juniper Leake | | ℥ iiii | | 0 | 1 | 6 |
| Vermilion | | ℥ xiii | | 0 | 4 | 4 |
| Flor. Staechados | | ℥ iiss | | 0 | 0 | 4 |
| Sem. pioniae | | ℥ x | | 0 | 1 | 0 |
| Rad.Mandragora et cortex oxicanth | | ℥ iii | | 0 | 0 | 4 |
| Rad Cicers | | ℥ iii | | 0 | 0 | 6 |
| Rad.costi pulvis et dictamn. | | ℥ 4 | | 0 | 0 | 6 |
| Sem. petroselin | lb.ss | | | 0 | 0 | 4 |
| Cortex capparis et Tamarisciar[um] | | ℥ iiii | | 0 | 1 | 0 |
| Pyrethrum Hispanicu[m] | lb.ss | | | 0 | 0 | 9 |
| Sem. Frigid. | 4 lb | ℥ iii | | 0 | 1 | 10 |
| Fragmenta pretiosa | | ℥ i | ℥ vi | 0 | 5 | 6 |
| Scamoniar[um] | | ℥ viss | | 0 | 16 | 3 |
| Elaterinum | | | ℥ iss | 0 | 5 | 0 |
| Scamoniu[m] sulphuratu[m] | | ℥ i | ℥ vii | 0 | 5 | 0 |
| Leafe Gold | 3 bookes & ½ | | | 0 | 7 | 0 |
| | | | | 4 | 3 | 4 |

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| | | | | | | |
|---|---|---|---|---|---|---|
| Leafe silver | 1 booke | | | 0 | 1 | 0 |
| Sem Agni casti | | | ℥ ii | 0 | 0 | 0 |
| Mouth Gum[m] | | ℥ xiii | | 0 | 5 | 0 |
| Stone Blew | | ℥ xii | | 0 | 1 | 6 |
| Green verditer | lb.ss | | | 0 | 1 | 6 |
| Gum[m] Sandarach | | ℥ ii | | 0 | 0 | 6 |
| Gum[m] Amoniacum | | ℥ vii | | 0 | 2 | 4 |
| Fine Amber | | ℥ xii | | 0 | 2 | 6 |
| Cardomom majora | lb.*ii* | ℥ *ii* | | 0 | 2 | 3 |
| Coccus Baphicus | | ℥ vi | | 0 | 1 | 0 |
| Cubebs | lb.i | ℥ vi | | 0 | 4 | 0 |



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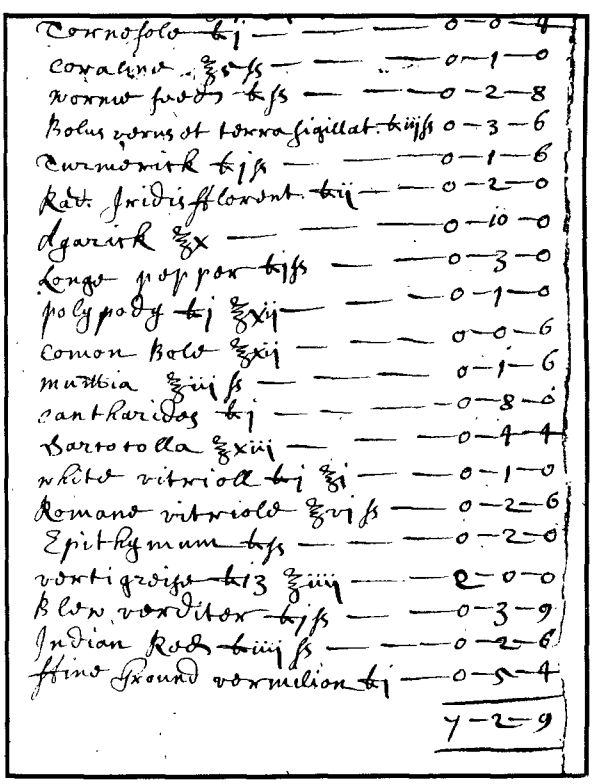
|---|---|---|---|---|---|
| Mastich | | ℥ viss | 0 | 3 | 3 |
| Camphor | | ℥ i ℨ i | 0 | 0 | 10 |
| Tachamahacha | | ℥ vii | 0 | 10 | 6 |
| Gum[m] Elemi | | ℥ 5ss | 0 | 1 | 8 |
| Gum[m] Sagapenum | | ℥ iiss | 0 | 4 | 0 |
| Gum[m] Hederae | | ℥ iss | 0 | 1 | 0 |
| Caranna | | ℥ ii ℨ ii | 0 | 3 | 6 |
| Tornesole | lb.i | | 0 | 0 | 4 |
| Coraline | | ℥ 5ss | 0 | 1 | 0 |
| worme seeds | lb.ss | | 0 | 2 | 8 |
| Bolus vernuset terra sigillat | lb.iiiss | | 0 | 3 | 6 |
| Turmerick | lb.iss | | 0 | 1 | 6 |
| Rad. Iridis Florent | lb.ii | | 0 | 2 | 6 |
| Agarick | | ℥ x | 0 | 10 | 0 |
| Longe pepper | lb.iss | | 0 | 3 | 0 |
| polypody | lb.i | ℥ xii | 0 | 1 | 0 |
| comon Bole | | ℥ xii | 0 | 0 | 6 |
| mum[m]ia | | ℥ iiiss | 0 | 1 | 6 |
| Cantharides | lb.i | | 0 | 8 | 0 |
| Sarcocolla | | ℥ xiii | 0 | 4 | 4 |
| white vitrioll | lb.i | ℥ i | 0 | 1 | 0 |
| Romane vitrioll | | ℥ viss | 0 | 2 | 6 |
| Epithymum | lb.ss | | 0 | 2 | 0 |
| vertigreise | lb.13 | ℥ iiii | 2 | 0 | 0 |
| Blew verditor | lb.iss | | 0 | 3 | 9 |
| Indian Red | lb.iiiiss | | 0 | 2 | 6 |
| Fine Ground vermilion | lb.i | | 0 | 5 | 4 |
| | | | 7 | 2 | 9 |



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A page from Needham's shop inventory.

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| | | | Li. | s. | d. |
|---|---|---|---|---|---|
| Black Leade Ground | lb.5 | ℥ iiii | 0 | 4 | 0 |
| Black Leade unground | lb.14ss | | 0 | 9 | 4 |
| Rad. Contrayerva | | ℥ ii ℨ iii | 0 | 1 | 6 |
| Spurge seeds | | ℥ i | 0 | 0 | 6 |
| Sem. Plantaginis | | ℥ vi | 0 | 0 | 6 |
| Sem. Cynoglossi | | ℥ i | 0 | 0 | 4 |
| Rad. Filiipendulae | | ℥ vi | 0 | 0 | 6 |
| Rad. Scorsonerae | | ℥ viiss | 0 | 1 | 0 |
| Sem. Angellicae | | ℥ iiii | 0 | 0 | 4 |
| Basill seeds | | ℥ 5 | 0 | 0 | 8 |
| Castoreum | | ℥ iiss | 0 | 5 | 0 |
| Fine Gum Arabick | lb.iii | ℥ xiiiiss | 0 | 6 | 0 |
| Fine Gum Tragacanth | lb.i | ℥ vi | 0 | 3 | 8 |
| Bay Berryes | lb.ss | | 0 | 0 | 4 |
| Galanga | | ℥ iiss | 0 | 1 | 0 |
| perfuminge cloves | | ℥ xii | 0 | 1 | 6 |
| Sanguis Dragonis | lb.i | ℥ ss | 0 | 5 | 0 |
| Cocculus orientalis | | ℥ vii | 0 | 1 | 0 |
| Redi corrall | lb.ss | | 0 | 1 | 4 |
| Auripigment. | lb.vi | ℥ ii | 0 | 4 | 6 |
| Spikenard | | ℥ ii | 0 | 1 | 4 |
| Spodium | | ℥ xiii | 0 | 2 | 0 |
| Staphis Agria | lb.i | | 0 | 1 | 4 |
| more Lapis Hibernicus | | ℥ 5 | 0 | 0 | 5 |
| more Lapis calaminaris et Lap.Tutiae | | lb.iiss | 0 | 1 | 6 |
| Crocus martis | | ℥ xi | 0 | 2 | 0 |
| Sem. milii solis | | ℥ xi | 0 | 1 | 0 |
| Fenugreek | lb.iiiss | | 0 | 2 | 4 |
| Linseed & Henbane seed | | —— | 0 | 0 | 6 |
| Cuchineale | | ℥ iii | 0 | 8 | 0 |
| Confectio de Kermes | | ℥ ii | 0 | 5 | 6 |
| Conf. de Hyacintho | | —— | 0 | 1 | 0 |
| Spermacaeti | | ℥ i | 0 | 8 | 0 |
| Bulletts | lb.xii | | 0 | 2 | 0 |
| Indian Leafe | | ℥ i | 0 | 0 | 6 |
| Gum Galbanum | | ℥ vi | 0 | 2 | 0 |
| Gum Bdellium | | ℥ iss | 0 | 0 | 6 |
| Hermodactills | | ℥ x | 0 | 1 | 0 |
| Best Sealinge wax | | ℥ 9 | 0 | 2 | 3 |
| Soft Wax | | ℥ 9 | 0 | 0 | 9 |
| | | | 5 | 1 | 11 |

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| | | | | | |
|---|---|---|---|---|---|
| Icthiocolla | lb.i | | 0 | 8 | 0 |
| Cuttle bone | | ℥ x | 0 | 1 | 6 |
| Colocynthis | lb.ii | ℥ xii | 0 | 13 | 6 |
| Cort.winterian. | lb.i | | 0 | 1 | 6 |
| Cassia Lignea | lb.ss | | 0 | 2 | 0 |
| Sanders wood | lb.ii | ℥ iii | 0 | 3 | 6 |
| Lign. vitae | lb.9 | ℥ iiii | 0 | 4 | 1 |
| White wax | lb.i | ℥ i | 0 | 3 | 4 |
| Ceterach | lb.i | | 0 | 1 | 6 |
| more Cassia Lignea | | ℥ iiii | 0 | 1 | 0 |
| Lupins | lb iiii | ℥ vi | 0 | 0 | 8 |
| Calamus Aramaticus | | ℥ 9 | 0 | 1 | 0 |
| Litharge | lb.vii | | 0 | 4 | 1 |
| purld Barley | lb.viiss | | 0 | 5 | 0 |



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| | | | | Li. | s. | d. |
|---|---|---|---|---|---|---|
| comon Argoll | lb.iiii | | | 0 | 1 | 8 |
| Umber | lb.i | | | 0 | 0 | 3 |
| Lign. Sassafras | lb.vi | ℥ | iiii | 0 | 6 | 0 |
| Harts Horne | lb.ii | ℥ | iii | 0 | 3 | 8 |
| white Leade | lb.viii | ℥ | x | 0 | 3 | 6 |
| Mirrh | lb.ii | ℥ | i | 0 | 4 | 3 |
| Olibanu[m] | lb.i | ℥ | 5 | 0 | 2 | 8 |
| w[hi]t[e] pitch | lb.viii | ℥ | iiii | 0 | 4 | 0 |
| Spanish Sope | | ℥ | vi | 0 | 0 | 3 |
| yellow wax | lb.iss | | | 0 | 2 | 0 |
| Honey | lb.x | | | 0 | 6 | 8 |
| Spunck | lb.ss | | | 0 | 1 | 6 |
| Galls | lb.i | ℥ | xiiii | 0 | 1 | 6 |
| Shott | lb.18 | | | 0 | 3 | 0 |
| Oker | lb.5 | ℥ | 4 | 0 | 1 | 0 |
| Arsnick | lb.ii | | | 0 | 2 | 0 |
| Red Lead | lb.viiss | | | 0 | 1 | 6 |
| Red sanders Ground | lb.iiss | | | 0 | 3 | 2 |
| w[hi]t[e] candy | lb.iii | ℥ | 9 | 0 | 10 | 0 |
| Glister pipes | 4 dozen & 3 | | | 0 | 5 | 4 |
| Match | eleven yards | | | 0 | 0 | 10 |
| Juice Liquoris | lb.iii | ℥ | xii | 0 | 5 | 0 |
| Turpentine com[m] | lb.iiiss | | | 0 | 1 | 4 |
| Black sope | lb.28 | | | 0 | 8 | 6 |
| Olives | 1 gallon | | | 0 | 5 | 0 |
| Capers | lb.10 | | | 0 | 6 | 8 |
| | | | | 7 | 1 | 11 |

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| | | | | Li. | s. | d. |
|---|---|---|---|---|---|---|
| Fine Liquoris powder | lb.ii | ℥ | x | 0 | 3 | 0 |
| pulvis Sennae comp. | | ℥ | iss | 0 | 2 | 0 |
| Species Diacidon. | | ℥ | iii | 0 | 1 | 0 |
| Species Diacalaminth. comp. | | ℥ | iss | 0 | 1 | 0 |
| Sp. Diasatyrian nichol | | ℥ | ii | 0 | 1 | 6 |
| Sp. Hierae Galeni[m] | lb.ss | | | 0 | 8 | 0 |
| pulv. contra Lumbr. | | ℥ | ii | 0 | 1 | 6 |
| Gum[m] Arabeck pulverisat. | | ℥ | iiii | 0 | 0 | 6 |
| Sp. Dianthos | | ℥ | iiss | 0 | 1 | 0 |
| pulv. Haly | | ℥ | iss | 0 | 0 | 8 |
| Sp. Hiera pachii | | ℥ | ii | 0 | 1 | 6 |
| Sp. Diatragacanth. Frig. | | ℥ | i | 0 | 0 | 4 |
| pulv. Sennae varag. | | ℥ | i | 0 | 1 | 6 |
| Trochischi De carabe | | ℥ | i | 0 | 1 | 0 |
| Troch. De terrasigillat | | ℥ | i | 0 | 1 | 0 |
| Resine Jalapi | | | ℥ iss | 0 | 1 | 6 |
| Sp. Diagalanae | | | ℥ i | 0 | 0 | 2 |
| Diacalaminth. Simpl. | | ℥ | ii | 0 | 0 | 8 |
| Sp. Diamargarit. Frig | | ℥ | i | 0 | 2 | 6 |
| Rad. Iridis pulverisat | | ℥ | ii | 0 | 0 | 3 |
| Sp. Aromat. Rosat | | | ℥ i | 0 | 0 | 4 |
| Sp. Diacurcum | | ℥ | i | 0 | 0 | 6 |
| pulvis Enulae | | ℥ | iii | 0 | 0 | 4 |
| pulv. Sem. Anisi | | ℥ | ii | 0 | 0 | 2 |
| Diaturbith cum Rhabarbar | | ℥ | ii | 0 | 2 | 0 |
| Antidotus Hemagog. | | | ℥ vi | 0 | 1 | 0 |
| Sp. Dialaccae | | ℥ | ii | 0 | 2 | 0 |
| Sp. Diamosch. Dulcis | | | ℥ ii | 0 | 0 | 8 |
| Sp. Diarhodon Abatis | | | ℥ vi | 0 | 0 | 2 |
| Terebinthina ciprea | | ℥ | vi | 0 | 2 | 6 |
| Glasses for species Nro 54 | | | | 0 | 13 | 6 |
| Styrax Liquida | | ℥ | xii | 0 | 2 | 0 |
| Vernish | lb.iii | | | 0 | 2 | 0 |
| | | | | 3 | 0 | 1 |

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| | | | | Li. | s. | d. |
|---|---|---|---|---|---|---|
| Oyle of Spike | lb.iii | ℥ | 10 | 0 | 8 | 9 |
| ol. Laurinum | lb.iss | | | 0 | 2 | 0 |
| preserved cherryes | —— | | | 0 | 1 | 0 |
| Lady Allens water | lb.ii | | | 0 | 2 | 6 |
| Spir. castorei | lb.ss | | | 0 | 4 | 0 |
| Aq. Histerica | lb.ss | | | 0 | 1 | 6 |
| Aq. cordialis saxon. | lb.iss | | | 0 | 5 | 0 |
| ol. Tartari | lb.i | | | 0 | 2 | 0 |
| Aq. Bezoardicae | | ℥ | ii | 0 | 0 | 6 |
| Spir. vini | lb.i | | | 0 | 4 | 0 |
| Aq Langii | lb.ii | | | 0 | 5 | 0 |
| Spir. vitrioli | | ℥ | i | 0 | 0 | 3 |
| ol. vitrioli | | ℥ | vii | 0 | 6 | 0 |
| Spir. croci | | ℥ | vi | 0 | 6 | 0 |
| Cinamon water | | ℥ | iiii | 0 | 1 | 0 |
| Syr. papaveris | lb.i | | | 0 | 2 | 6 |
| Syr. De Staechade | | ℥ | iiii | 0 | 1 | 0 |
| Syr. Menthae | | ℥ | xii | 0 | 1 | 6 |
| Syr. cariophillon[um] | lb.vi | | | 0 | 12 | 0 |
| Syr. De cichoreo cu[m] Rheo | | ℥ | xii | 0 | 2 | 6 |
| Syr. Diaserios | lb.ss | | | 0 | 1 | 4 |
| Syr. Limonum | lb.5 | | | 0 | 6 | 8 |
| Syr. De pomis | lb.i | | | 0 | 3 | 6 |
| Syr. De Absinthio | lb i | | | 0 | 1 | 6 |
| Syr. violaru[m] | lb iii | | | 0 | 12 | 0 |
| Syr. Scabiosae comp. | lbss | | | 0 | 2 | 0 |
| Syr. of Rasberyes | lb.ss | | | 0 | 1 | 0 |
| Syr. De Artemisia | | ℥ | iii | 0 | 0 | 6 |
| Syr. Bizantinus | lb.ss | | | 0 | 1 | 0 |
| Syr. De Erisimo | lb.ss | | | 0 | 1 | 0 |
| Aq. Tilliae | lb.i | | | 0 | 1 | 6 |
| Syr. Rosar.Sol. | lb.iiiss | | | 0 | 8 | 9 |
| Syr. nympheae | lb.iss | | | 0 | 1 | 6 |
| Brasill cost | ------ | | | 0 | 0 | 6 |
| Aq. Theriacalis | lb.iii | | | 0 | 7 | 6 |
| Ol. Terebinthinae | lb.iiss | | | 0 | 2 | 6 |
| | | | | 6 | 1 | 3 |

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| | | | | Li. | s. | d. |
|---|---|---|---|---|---|---|
| Petroleum | lb.ss | | | 0 | 1 | 6 |
| Aq. Fortis | lb.i | | | 0 | 2 | 6 |
| Ol. Mastichin[um] | lb.ss | | | 0 | 1 | 6 |
| Ol. Anethi & Absinthan[um] | lb.iii | | | 0 | 9 | 0 |
| Ol. Rutae | lb.iiii | | | 0 | 6 | 0 |
| Ol. Chamamel. | lb.iiiiss | | | 0 | 6 | 6 |
| Ol Rosar[um] | lb.iiii | | | 0 | 4 | 6 |
| ung contra Lumbricos | lb.iii | | | 0 | 6 | 6 |
| Ol. Lillionu[m] | lb.iiii | | | 0 | 6 | 0 |
| Swines Grease | 34 lb. | | | 0 | 18 | 0 |
| cons Roses | lb.15 | | | 0 | 7 | 6 |
| cons. Betony | lb.iss | | | 0 | 2 | 3 |

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| | | | Li. | s. | d. |
|---|---|---|---|---|---|
| cons. Cidonioru[m] | | ℥ ii | 0 | 0 | 3 |
| cons. Flor. gariophilloru[m] | lb.i | | 0 | 1 | 6 |
| cons. Anthos | lb.i | | 0 | 2 | 0 |
| cons. Oxicanthi | | ℥ iiii | 0 | 0 | 6 |
| cons. capill. veneris | lb.ss | | 0 | 1 | 0 |
| cons. prunell. silvestr. | lb.ss | | 0 | 0 | 9 |
| Marmalad | lb.8 | | 0 | 10 | 0 |
| Ol. Mint | lb.ii | | 0 | 3 | 0 |
| Ol Melilot | lb.ii | | 0 | 1 | 8 |
| Empl.Melilot.Simpl. in A pott | lb.4 | | 0 | 4 | 0 |
| Ol. Anethi | lb.i | | 0 | 1 | 6 |
| Cl. Hiperici | lb.i | | 0 | 1 | 6 |
| Cl. Sabinae | lb.i | | 0 | 1 | 6 |
| Oximell | lb.i | | 0 | 1 | 6 |
| Diacodium | lb.iii | | 0 | 5 | 0 |
| Syr.capill veneris ett Hisopian[m] | lb.ss | | 0 | 1 | 6 |
| Acetum Scilliticu[m] | lb.ii | | 0 | 1 | 0 |
| Syr. Acetosus | lb.ii | | 0 | 3 | 0 |
| Ung nicotianae | lb.ii | | 0 | 4 | 0 |
| Ung pomatu[m] | lb.iiii | | 0 | 7 | 6 |
| Ung Apostolicum | lb.i | | 0 | 2 | 6 |
| Mercurius sublimatus | | ℥ iii | 0 | 2 | 0 |
| Mercur. precipitat. | | ℥ i | 0 | 0 | 8 |
| Ung Agrippae | lb.iiii | | 0 | 6 | 0 |
| | | | 6 | 15 | 7 |

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| | | | | | |
|---|---|---|---|---|---|
| Ung. Rubrum | lb.i | | 0 | 1 | 6 |
| Ung. comitissae | | ℥ iiii | 0 | 1 | 0 |
| Lohock Sanu[m] | | ℥ iiii | 0 | 0 | 6 |
| Diaprunu[m] Sol. | | ℥ iiii | 0 | 1 | 0 |
| Diaphaenicon | | ℥ iiii | 0 | 1 | 0 |
| Diacorallion | | ℥ ii | 0 | 1 | 0 |
| Electuar. E.[t] succo Rosaru[m] | lb.i | | 0 | 2 | 6 |
| Elect. Diatrion piperion | | ℥ iiii | 0 | 0 | 6 |
| Elect. Lenitivu[m] | | ℥ vi | 0 | 1 | 6 |
| Conf. Hamech | lb.iii | | 0 | 7 | 6 |
| Diacidoniu[m] | lb.iss | | 0 | 2 | 3 |
| pickled Sampeir | lb.iii | | 0 | 3 | 0 |
| Ung. populeon | lb.iii | | 0 | 0 | 8 |
| Ung Martiatum | lb.i | | 0 | 2 | 0 |
| Ung. Dialthea | lb.ii | | 0 | 4 | 0 |
| Linamentu[m] Arcei | lb.i | | 0 | 3 | 6 |
| Cons. Lujulae | lb.ii | | 0 | 3 | 0 |
| Ung. Basilicon | lb.ii | | 0 | 2 | 0 |
| Diascordeum | lb.iss | | 0 | 6 | 0 |
| Theriaca Lond. | lb.ss | | 0 | 1 | 6 |
| pin[n]dust | cost | | 0 | 0 | 3 |
| Ung. Aregon | lb.i | | 0 | 2 | 0 |
| Ung. Nicotianae | lb.i | | 0 | 2 | 0 |
| Ung. Martiatum | | ℥ xii | 0 | 1 | 6 |
| Ceratum Santalinu[m] | lb.ss | | 0 | 1 | 0 |
| Ung. pectorale | lb.i | | 0 | 1 | 6 |
| Ung. Anodinu[m] | | ℥ iiii | 0 | 0 | 6 |
| Ung. E. Succis Aperativis | lb.ss | | 0 | 1 | 0 |
| Ung. Refrigerans Galeni | lb.iss | | 0 | 3 | 0 |
| Ung. Tutiae | lb.ss | | 0 | 1 | 0 |
| Rape oyle | ———— | | 0 | 1 | 0 |
| Simple Emplaisters | lb.vi | ℥ vi | 0 | 6 | 4 |
| Compound Emplaisters | lb.xii | | 1 | 16 | 0 |
| Syrup potts | nro. 25 | | 1 | 5 | 0 |
| conserve potts | nro. 21 | | 1 | 1 | 0 |
| Double Glass Bottles | | 3 dozen & 7 | 0 | 10 | 6 |
| | | | 8 | 0 | 6 |

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| | | | | | |
|---|---|---|---|---|---|
| A Tobacco knife & press | | | 0 | 5 | 0 |
| Boxes nro. 60 att 6d. p[er] box | | | 1 | 10 | 0 |
| three counters | | | 0 | 15 | 0 |
| Leeches & glass | | | 0 | 1 | 0 |
| Cotten | lb.i cost 2s | | 0 | 2 | 0 |
| Writeinge & course paperan[m] | 12 quire | | 0 | 5 | 6 |
| Brest Glasses Nro.2 | | | 0 | 0 | 8 |
| Gun powder | 24 lb. | | 1 | 4 | 0 |
| Browne paper | A Bundle | | 0 | 2 | 0 |
| Gally yellow potts | 1 gross & ½ | | 0 | 4 | 6 |
| Safron | ℥ i | ℥ ii | 0 | 5 | 0 |
| Muske | | ℥ ii | 0 | 14 | 0 |
| civett | | ℥ ii | 0 | 14 | 0 |
| Ambr. Greise | | ℥ iss | 0 | 16 | 0 |
| East Bezoar | | ℥ i | 0 | 7 | 0 |
| w[hi]t[e] Juice Liquoris | ℥ vii | | 0 | 1 | 10 |
| Vitriolum martis | ———— | | 0 | 1 | 6 |
| Salt peeter | lb.10 att 10d p.lb. | | 0 | 8 | 4 |
| Sal prunella | lb.ss | | 0 | 2 | 8 |
| Bay Salt | lb.xii | | 0 | 2 | 0 |
| Ol. Macis | ———— | | 0 | 4 | 0 |
| Dates | lb.viiss | | 0 | 7 | 6 |
| Fine Manna | ℥ xii | | 0 | 4 | 0 |
| Sal vitrioli | ℥ ii | | 0 | 3 | 0 |
| Lapis Tartari | ℥ ii | | 0 | 3 | 0 |
| Sal armoniack ℥ i | Salgem ℥ iss | | 0 | 0 | 3 |
| Sal Succini | | ℥ iii | 0 | 1 | 6 |
| Sal. Absinth | | ℥ ii | 0 | 0 | 4 |
| Tartaru[m] vitriolatu[m] | ℥ ss | | 0 | 0 | 8 |
| Sal Chalybis | | ℥ ii | 0 | 0 | 8 |
| Sal cochleariae | | ℥ i | 0 | 0 | 3 |
| Boxes Nro 16 | | | 0 | 5 | 0 |
| Roots & Herbs wth their Apurtenances | | | 0 | 5 | 0 |
| Squills | lb.i | | 0 | 1 | 0 |
| | | | 9 | 18 | 2 |

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| | | | | | |
|---|---|---|---|---|---|
| Small boxes | 3 gross att 10d. | | 0 | 2 | 6 |
| Stone bottles | 2 dozen & 6 | | 0 | 2 | 6 |
| two pownd potts Holland mettle | nr. 77 | | 0 | 12 | 10 |
| w[hi]t[e] Galley potts | nro. 18 | | 0 | 0 | 9 |
| Small Boxes | 4 dozen | | 0 | 2 | 0 |
| Small Violls | 7 dozen | | 0 | 3 | 6 |
| Urinalls | Nro. 6 | | 0 | 1 | 0 |
| Cruciples | ------ | | 0 | 5 | 0 |
| Figgs cost 20s. | | | 1 | 0 | 9 |
| Severall sorts of Fatts & marrowes | | | 0 | 1 | 0 |
| Magister corralli | —— | | 0 | 1 | 6 |
| Pectorall pills | ℥ x | | 0 | 5 | 0 |
| Ambr. Greise | | ℈ i | 0 | 3 | 6 |
| perl. -parat [?] | ℥ ii | | 0 | 2 | 0 |



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| | | | Li. | s. | d. |
|---|---|---|---|---|---|
| rest. Bezoar | | ℈ i | 0 | 1 | 6 |
| Spir. Rosar. | | gr.iii | 0 | 0 | 3 |
| three Boxes with Scales & glasses | | | 0 | 5 | 0 |
| Deare Suett | lb.ii | | 0 | 0 | 8 |
| A peare Bullett moulds | | | 0 | 1 | 0 |
| Four Iron Skellets, 1 brass and an instrument for pressinge oyles | | | 0 | 7 | 6 |
| A mixeinge Stone | | | 0 | 1 | 6 |
| Eight Iron Instruments | | | 0 | 3 | 0 |
| A three bit Gimblett | cost | | 0 | 1 | 6 |
| two Hammers | | | 0 | 1 | 4 |
| Four Tunnells [sic] | | | 0 | 1 | 0 |
| Six pewter vessells | | | 0 | 6 | 0 |
| An oyle pott | | | 0 | 0 | 8 |
| A paire greate Skales | | | 0 | 6 | 8 |
| Scales & weights | | | 1 | 0 | 0 |
| Searces | nro 8 | | 0 | 5 | 0 |
| Morters & pestills | | | 4 | 10 | 0 |
| Guilded & com[mon]-paper | | | 0 | 3 | 0 |
| A Scale Beame | cost | | 0 | 1 | 6 |
| A large Grater | cost | | 0 | 0 | 6 |
| | | | 11 | 0 | 8 |

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| | | | Li. | s. | d. |
|---|---|---|---|---|---|
| Wafers | lb.iii | ℥ vii | 0 | 5 | 3 |
| Virginy tobacco | lb.30 | | 3 | 3 | 0 |
| Best tobacco | 27 lb. | | 3 | 10 | 0 |
| Spanish tobacco | lb.5 | | 2 | 0 | 0 |
| Frankincens | 20 lb. att 6d | | 0 | 10 | 0 |
| Red wood | lb.20 | | 0 | 3 | 0 |
| Oyle olives | i gallon | | 0 | 4 | 6 |
| Sweet oyle | half gallon | | 0 | 2 | 6 |
| Caperas | ℔ ii | | 0 | 16 | 0 |
| Tobacco stalks | —— | | 0 | 6 | 0 |
| Liquoris | lb.7ss att 9d. | | 0 | 5 | 6 |
| Smalts | 2 stone att 7d p[er] lb. | | 0 | 16 | 4 |
| Linseed oyle | 12 gallons att 3s.8d. | | 2 | 4 | 0 |
| Oyle Barrells | nro. 19 | | 0 | 8 | 6 |
| Boxes | nro. 10 | | 0 | 5 | 0 |
| Glasses | ——— | | 0 | 2 | 6 |
| Glass plates | 1 dozen | | 0 | 3 | 0 |
| Comphits | 53 lb. | | 3 | 1 | 10 |
| cand. Ginger | lb.iiss | | 0 | 7 | 6 |
| Marchpane | lb.5 | | 0 | 7 | 6 |
| naples Biskett | lb.21 | | 1 | 2 | 9 |
| Make Roons [sic] | lb.vi | | 0 | 9 | 0 |
| Dryed citron | lb.iii | | 0 | 9 | 0 |
| Dryed Sucketts | lb.iiss | | 0 | 10 | 0 |
| cand. Elicampane | lb.i | ℥ 6 | 0 | 3 | 6 |
| Dryed plum[m]s | lb.ii | ℥ ii | 0 | 7 | 6 |
| past | lb.iii | ℥ iiii | 0 | 6 | 6 |
| more cand. Elicampane | lb.ii | ℥ ii | 0 | 5 | 4 |
| Rasberry past | lb.i | ℥ ii | 0 | 2 | 6 |
| Dryed Apricocks | lb.ii | ℥ 14 | 0 | 11 | 6 |
| Dryed Peares | lb.iiss | | 0 | 7 | 6 |
| Eringo | lb.iss | | 0 | 6 | 9 |
| Pippins | lb.iii | | 0 | 8 | 0 |
| Rock candy | lb.iii | ℥ 9 | 1 | 1 | 0 |
| Dryed quince | | ℥ 14 | 0 | 3 | 0 |
| Sucketts | lb.iss | | 0 | 3 | 6 |
| Cand. Lemon | lb.ii | ℥ iii | 0 | 5 | 6 |
| Cand. Orange | lb.iiii | ℥ ii | 0 | 10 | 4 |
| one pewter Still with Bottom | | | 1 | 0 | 0 |
| one Leaden Still with Bottom | | | 0 | 10 | 0 |
| One press with Draw Boxes | | | 1 | 10 | 0 |
| One nest Boxes uncolored | | | 0 | 13 | 4 |
| The Green nest | | | 0 | 13 | 4 |
| The Blew nest | | | 1 | 0 | 0 |
| The yellow nest | | | 0 | 16 | 0 |
| Fivety yards shelves with planks | | | 0 | 10 | 0 |
| One narrow Chest with particions | | | 0 | 6 | 8 |
| Two Lancetts with case | | | 0 | 5 | 4 |
| | | | 34 | 6 | 3 |
| | | Summ Totall | 120 | 8 | 9 |

April 21th. 1665

Preysers Robert Waterhous[e]
John Hill

It can be seen that a minor part of his stock consisted of what we would today call groceries and confectionery: "marmalad, dryed Apricocks, dryed peares, candied ginger, machpane, comphits, makaroons", etc. He had a large stock of tobacco, but drugs of animal origin were few, only sponge, castoreum, cuttle bone, civit, musk, ambergris and extract of bezoar. Of chemicals he had a good selection including, "Coperas, vermilion, arsenick, armoniak, sal. vitriol, vertigreize, white lead, crude antimony" etc. Oils, spirits, waters, syrups, ointments were numerous and included amongst the compounds there were of course Theriaca Lond. and Mithridate.

His pharmacy was well equipped with two stills, one of pewter and one of lead, a large grater, four funnels, two hammers, mortars and pestles, crucibles, four iron skillets and one of brass, eight pairs of scissors, scales and weights and a scale beam, a three-bit gimblet, an instrument for pressing oil and a tobacco knife and press. It is noteworthy that he had also leeches, two lancets with case, six urinals, four dozen and three clyster pipes and two breast glasses, but whether he used them himself or kept them in stock for the surgeons of the town is not known.

It is difficult to make a direct comparison with the prices and values of today, whether of pharmaceutical or more general goods. In the first half of the seventeenth century John West has shown that the price of a shirt averaged a shilling, as did a lantern and a shovel. A cow was priced at between £2 and £3, a sheep three to six shillings and a chicken a penny. Cheese was about 2d. a pound, woollen yarn a shilling to two shillings a pound, and a frying pan 3d.[51] Later in the century, Priestley and Fenner price men



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and women's shoes at between 2s. and 3s. a pair, and pattens at a mere 8d a pair, whilst the wares of pottery shops were only a few pence each, and clay pipes were sold cheaply at 2s. the gross.[52]

Samuel Newboult, an apothecary of Lichfield who died in 1666 had his feather bed valued at £1 9s.6d., the bolster at 4s. and the two pillows at 3s.4d. A rug and a blanket were worth 15s. and his close stool with a pewter pan were a mere 3s. In Queen Ann's day a heavy wig could be as much as 30, even 40 guineas, and a postillion's new suit nearly £5, but few apothecaries would have risen to such heights.[53] The Coxs' work on inventories in Shropshire seems to indicate that prices over the period in which the bulk of inventories are found (roughly 1660-1720) did not vary greatly unless they were for imported goods such as spices which could rise steeply in wartime.[54]

## Notes and References.

1. N. & J. Cox, "Probate inventories: the legal background", Pt.I. *Local Historian,* vol.16, No.3, p.133. Although the 1529 Act of Henry VIII made the production of an inventory a necessity for probate or letters of administration, the Coxs point out that there is plenty evidence that inventories were commonplace well before then.
2. David Hey, *Family History & Local History in England,* London and New York, 1987, Longman,p.54.
3. Bristol Archive Office, Sealy-1717. The date in brackets indicates the year in which the inventory was made.
4. Lancashire Record Office, Pigott-1673.
5. Lincolnshire Archive Office,(in future L.A.O.), Poole-1677, Inv.219A/249; Leics. Record Office, Coleman-Adm.1660. No occupation is given for Thomas Coleman but as he possessed "a great herball, 1 dixanary, 3 Dispensitories and other Physical books" as well as pestles and mortars we are probably safe in assuming he was an apothecary. Public Record Office, London,(hereafter P.R.O.) Fothergill- Prob.4-17584.
6. There was a dynasty of Woods in Chesterfield in the 17th. and early 18th. centuries, all of them well-to-do apothecaries. Lichfield Joint Record Office,(in future L.J.R.O.) Wood-1701.
7. D.G.Vaisey (Ed.),"Probate inventories of Lichfield and district,1568-1680", *Collections for a history of Stafford-shire,*4th. series, 1969, vol.5,pp.99-102.
8. Stevens is termed "chirurgeon" but he sold "apothecary surraps and drugs" and "treakle" as well as possessing two pewter [sic] stills.
9. L.A.O.,Clarke - inv. 136/503.
10. R.W.Symons,"The Value of Inventories to the student of old Furniture" in *The Antique Collector,* Sept./Oct. 1950, p.182.
11. Poole (1677), ref.5, op.cit.; Nutton (1716), L.A.O., Inv.0/505.
12. Ref.6, op.cit., Wood, (1701).
13. University of York, copy of inventory held at Borthwick Institute, York, Kaye -1686.; Bristol A.O., Kerwood-1692
14. L.A.O., Inv.201-303; Greater London Record Office.(hereafter G L R.O.). AM/PI.(I) 1686/85.
15. Notts. Record Office, Garner -1703.
16. L.J.R.O., Bossley-1714.
17. Hampshire Record Office, White-1636. The Whites of Basingstoke were another dynasty of apothecaries.
18. National Library of Wales, MSS. Adm. & Inv. 22/1682. His father, also Richard Morgan,(died 1678), was termed a mercer but had sold a few apothecaries' wares,and had had also a "syder howse" and a "syder mill howse", his inventory amounting to £660.
19. R.Milward,"Books and Booksellers in late 17th century Chesterfield" in *Derbyshire Miscellany,* Vol.10, Pt.5, 1985, pp.119-145, see p.pp.125,131.
20. P.R.O., Prob.4/8740.
21. M.Rowe and G.E.Trease, "Thomas Baskerville, Elizabethan apothecary of Exeter", *Trans.Brit. Soc. Hist. Pharm.,* vol 1, No.1,(1970) p.8
22. One of the grumbles of the poet George Crabbe was that he was put to farm work by his first apprentice-master.
23. L.J.R.O., Wood-1715. Richard Wood (II) was the son of Edward (I) (1701)
24. Nat. Lib. Wales, MS.Gooden- B 1677-88I.
25. J.J.Bagley, "Inventories as a source of local history", Pt.III, *Amateur Historian,* vol.4, No.6, p.227; D.Hey, "A Dual Economy in South Yorkshire" in *Agriculture Hist. Rev.,*vol.17, Pt.II, 1969, pp.108-119.
26. M.Newbold & T.D.Whittet,"Some eminent Cambridge apothecaries", *Trans.Brit.Soc.Hist.Pharm.,* vol.I, No.4, (1977) p.200. Thomas Bromsgrove of Stow-on-the-Wold and his son, like Henry Rugeley of Potton, were both apothecaries and innkeepers, see, T.D.Whittet, "Gloucestershire apothecaries tokens and their issuers", *Jnl.Glos.Soc.Indust.Archaeol.,*(1985),p.21.
27. P.R.O., Prob.11/309-159; L.J.R.O., Dickenson-1723.
28. A.L.Wood, "Hemel Hempstead and its people during the 17th. and 18th. centuries" in S.Yaxley (Ed.), *History of Hemel Hempstead,* Borough of Hemel Hempstead, 1973, pp.80-81.
29. A man could claim membership of a guild provided his father (or his mother) were a member of that company or guild at the time of his birth; the son need not be of the same occupation as his father. It was also possible to gain the Freedom of a company by redemption, that is by "buying" one's membership. As some companies were cheaper than others these were favoured by penurious young men although the name of the guild had no connection with their own occupation. This however did not apply to the London Company of Apothecaries who demanded that the would-be entrant had done a suitable apprenticeship, and furthermore passed an examination.
30. G.E.Trease, *Pharmacy in History,* London, Bailliere, Tindall & Cox, 1964, p.145.
31. L.J.R.O., will of Lewis Dickenson-1775. Lewis was the son of Thomas also an apothecary of Stafford.
32. See ref. no.12.
33. See ref. no.20.
34. G.L.R.O., Hancock- A.M /PI(I) 1731/9.
35. See ref. no.16.
36. See ref. no.5. Documents upon "specialty" were those which were "under seal". e.g. a bond, a binding engagement with a penalty for non-compliance.
37. See ref. no.9; L.A.O., L.C.C., Admon.1674/56; L.J.R.O., Richard Wood II (1715); his grandfather, Richard I had bought Dickfield Bridge Smelting Mill in 1655 for £1,100, see G.E.Trease, "Manufacture of apothecaries' tokens", *Pharm.J.,*1966,*197*:324.
38. Trease, op.cit., see ref no 30, p.32.
39. Ibid.; L.J.R.O., Denman - 1753, Hodgkinson-1730
40. Oxford R.O., Farmer-1682.
41. See refs. 12 and 4.
42. L.A.O.,Beresford -1607;U.Priestley & A.Fenner, *Shops and Shopkeepers in Norwich 1660-1730,*pp.13-18.
43. See ref. no.18.
44. Notts. R.O., Clegg-1662. His inventory came to over £600, and his goods were in very large quantities, as he had a number of warehouses as well as a shop, he must have been a wholesaler and a retailer.
45. Rowe and Trease, op.cit., see ref. no.21, p.8.
46. Leics. R.O., Admon. Lambert -1742.
47. Rowe and Trease, op.cit., ref.no.21,p.9.
48. P.R.O., Will of Edward Davies,(1682) Prob.11/372-18
49. L.J.R.O., Needham-1666.
50. The total number of hearths given in the 1664 Hearth Tax Return is 676, and the total number of houses is 315, the occupiers of 101 being exedmpt from the tax because of poverty A multiplier of 4.75 is commonly applied, (See Hey, op.cit. ref. no 2, p.72) to give an estimate of the population, which thus gives a figure of 1,496. This figure is possibly too low as it takes insufficient account of those poor dwellings or shacks with no hearth, or the people who dossed down whereever they could find a possible niche. See D.G.Edwards, *Derbyshire Hearth Tax Assessments, 1662-1670,* Derbyshire Record Society, vol.vii, 1982, Wingerworth. The parish of Chesterfield, which was far bigger than the town itself, was large and encompassed a number of populous areas.
51. J.West, *Village Records,* London, 1962, Macmillan, pp. 95-119, 128-9.
52. M. George, *London Life,*, Penguin edn.,p.181.
53. See ref.42,pp.25.11.
54. "Yeoman and Colliers in Telford, 1660-1750" B.Trinder & J Cox, Chichester, 1980, Phillimore, p.28



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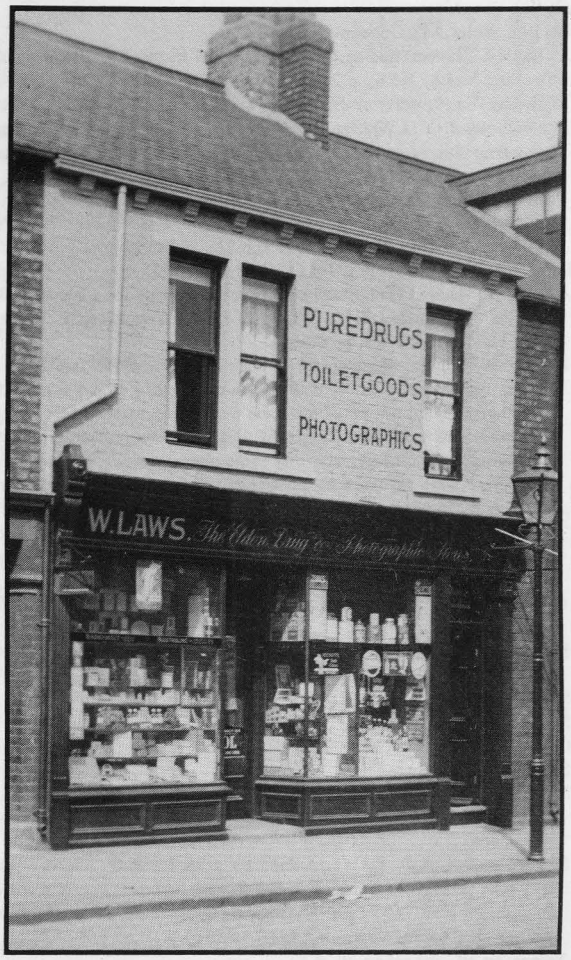
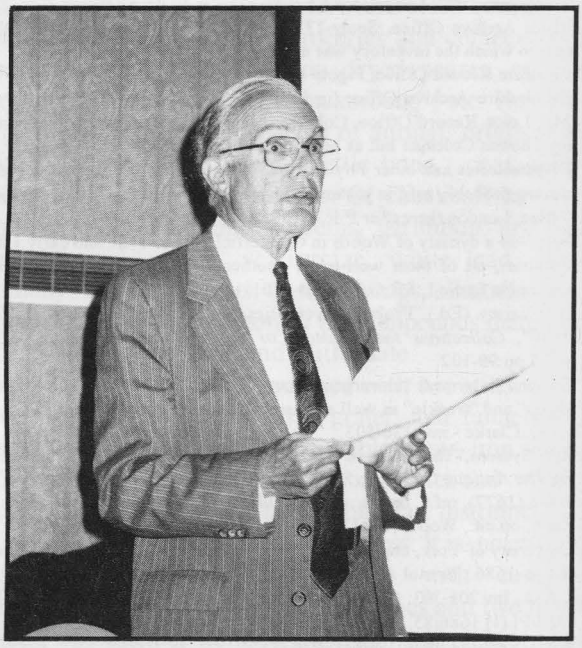



Does anybody recognise this pharmacy? Where is it? Who owned it? Please tell us. Dr. W. Halford of New York is very anxious to know

Enid Lucas Smith and Ann Hutton selling our mugs at Scarborough.



Anthony Morson delivering his paper at Scarborough Conference

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